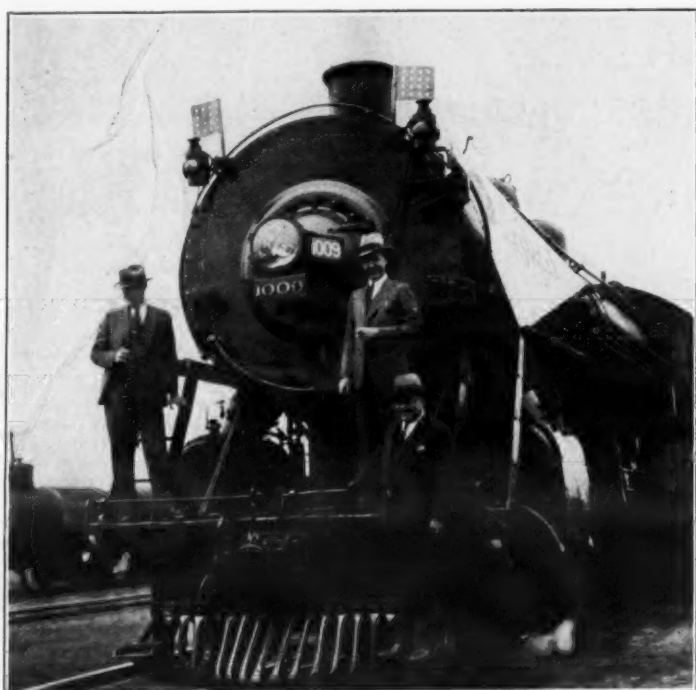


Norge Officials Celebrate Shipment of Five Trainloads



Mounted on the "cow-catcher" of the locomotive are R. E. Densmore, western sales manager of Norge; M. G. O'Harra, eastern sales manager, and John H. Knapp, vice president and director of sales.



Miss Maxine Noyes, of the Muskegon Junior College, "Miss Muskegon," smiles at the camera with Maj. Howard Blood, president of Norge Corp.



The "Alabama," lake steamer loaded with Norges, left for Milwaukee and Chicago as the five trainloads pulled out of the station. The hold of the steamer was packed with Norges.

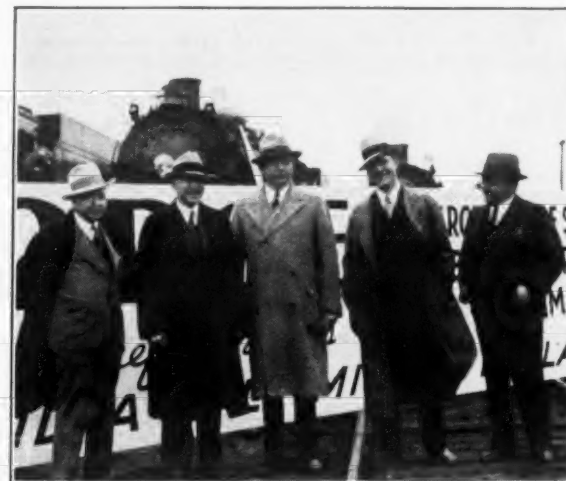


Muskegon's official representatives at the ceremony included, left to right, Martin Schoenberg, mayor of Muskegon Heights; Miss Maxine Noyes, Maj. Blood, Thomas V. Bennett, mayor of Muskegon, and Dr. Ernest Eimer, mayor of North Muskegon.

They Worked Overtime



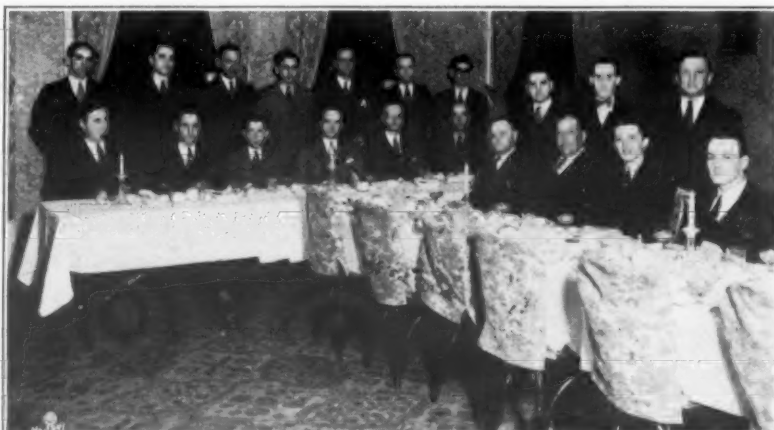
Norge factory personnel lines up in front of the waiting locomotives just before the trains with the carloads of refrigerators pulled out of Muskegon.



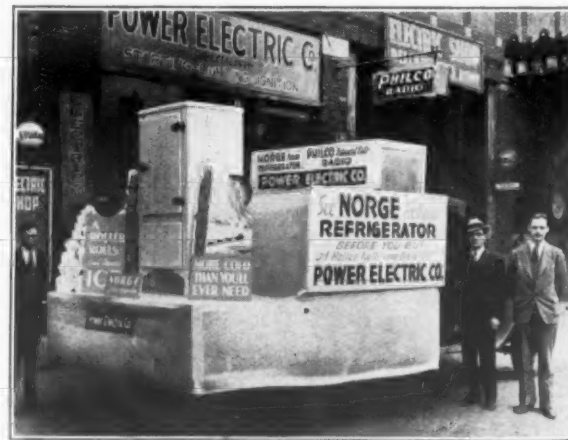
This group includes C. D. Donaven, secretary-treasurer of Norge Corp.; A. W. Seiler, vice president of Cramer-Krasselt Co.; Maj. Blood; George F. Taubeneck, editor of Electric Refrigeration News, and John H. Knapp, vice president and director of sales of Norge Corp.



Down in Little Rock, Ark., the Gunn Distributing Co. sells Norges to its dealers by the carload. Here is a carload arriving for Reap & Crawford, Pine Bluff, Ark.



Salesmen on the staff of the Radio Testing Station, Norge dealer in Binghamton, N. Y., hear 1932 sales plans at a dinner meeting.



This sound-equipped truck carrying a Norge set-up rode the streets of Sioux Falls every day during a sales campaign. Mr. Brown, manager, stands near the truck.



One of the overflow meetings of the Tribune-Telegram cooking schools, Salt Lake City, conducted by Miss Julia Lee Wright. A Norge refrigerator was used in the demonstration.



Rex M. Burroughs, Covington, Ky. (left), recently won this Norge in a contest sponsored by John Shiloto, Cincinnati, and Harten-Knodel Distributing Co.



Still another of the Salt Lake City Tribune-Telegram cooking schools, the Norge used in the demonstrations being loaned by the Strevell-Paterson Hardware Co., distributor.

ELECTRIC REFRIGERATION NEWS

Registered U. S. Patent Office.

The business newspaper of the refrigeration industry

ISSUED EVERY WEEK
VOL. 6, No. 37, SERIAL No. 165

Copyright, 1932, by
Business News Pub. Co.

DETROIT, MICHIGAN, MAY 18, 1932

Entered as second-class matter
Aug. 1, 1927, at Detroit, Mich.

TEN CENTS PER COPY
THREE DOLLARS PER YEAR

WILLIAMS PLANS TO MARKET NEW LOW-PRICED UNIT

**Conventional Machine
Will Be Used in
New Model**

By George F. Taubeneck

BLOOMINGTON, Ill.—Utilizing a conventional type of refrigerating machine in the bottom of the cabinet, a new 4-cu. ft. model Williams Ice-O-Matic electric refrigerator will soon be placed on the market to retail for a price much below any other Ice-O-Matic household refrigerator.

Although the list price of this model has not yet been definitely determined, it is thought that it will be somewhere in the neighborhood of \$125 f. o. b. Bloomington.

The compressor to be used in this model is known around the Williams factory as the "baby A," inasmuch as it is simply a small edition of the model A Ice-O-Matic commercial refrigerating machine. Other Ice-O-Matic household refrigerators have hermetically sealed refrigerating systems.

Many of the features of other Ice-O-Matic refrigerators, such as bar-type shelves and rounded interior corners, will be found in the new low-priced model. Its width will be 23 in., its depth 19½ in., and its height 50 in., counting the 6-in. legs.

Sales of Williams Ice-O-Matic commercial refrigerating machines have taken a recent spurt, according to Stanley Bell, sales manager of the Ice-O-Matic division of the Williams Oil-O-Matic Heating Corp. May sales of commercial equipment are thus far approximately 150 per cent over those of April, 1931.

(Concluded on Page 2, Column 4)

WINNERS OF GIBSON CONTEST ANNOUNCED

GREENVILLE, Mich.—(Special wire to ELECTRIC REFRIGERATION NEWS)—J. W. Prebola, salesman for H. D. MacRae, Inc., Rochester, N. Y., distributor for Gibson refrigerators, has been proclaimed the winner in a Gibson contest which closed Saturday.

Purpose of the contest was to obtain new dealer franchises and substantial orders from those dealers.

Second in the race was C. P. Bristol, also of MacRae; while E. H. Stone, salesman for the H. M. Tower Corp., Boston, was third; and Otto Schultz of Morley Brothers, Saginaw, Mich., was fourth.

Winners in the contest were able not only to "bring home the bacon," but to bring home whole baskets of Monarch brand canned and packaged groceries. Three assortments, one requiring 500

(Concluded on Page 2, Column 3)

GIBSON LINE TO BE SHOWN IN CHICAGO DURING R. M. A.

CHICAGO—A complete line of Gibson electric refrigerators, including the new 12-cu. ft. DeLuxe model with two-temperature feature, will be exhibited at 616 South Michigan Ave. during the Radio Manufacturers' Association meeting here next week.

Gibson Refrigerator Corp. has obtained a 35-ft. frontage on Michigan Ave. for the period of the show, and will have factory attendants at the exhibit at all times. Miss Jacqueline Frost, Gibson home economist, will be present at the booth during the entire week of the show.

Gibson will maintain headquarters at the Stevens Hotel, the location for R.M.A. meetings.

LEONARDS TO BE DISPLAYED DURING RADIO SHOW

CHICAGO—A full line of Leonard electric refrigerators will be shown at 822 S. Michigan Ave., here, during the Radio Manufacturers' Show next week, according to A. C. Jordan, sales promotion manager of the Leonard Refrigerator Co. Mr. Jordan will maintain headquarters at 2201 Stevens Hotel.

IN THIS ISSUE: REFRIGERATOR SPECIFICATIONS

SPECIFICATIONS for the complete household electric refrigerator lines of 33 leading companies will be found beginning on page 2 of the *Engineering Section* of this issue. Included is information on sizes and dimensions, parts and materials, prices and capacities, etc.—answering more than 100 questions.

Specifications on the 33 makes of refrigerators will be found on these pages: Apex, 14; Bohn, 18; Buckeye, 2; Cavalier, 6; Copeland, 2; Crosley, 18; Devon-Air, 18; Frigidaire, 6; General Electric, 4; Gibson, 14; Gilfillan, 4; Grinnell, 18; Ice-O-Matic,

10; Kelvinator, 2; Keokuk, 12; Leonard, 8; Lincoln (Southern Calif. Eng. Co.), 18; Majestic, 6; Mayflower, 4; Merchant & Evans, 16; Napier (Metal Saw & Machine), 14; Mitycold, 18; Niagara (Heinz & Munschauer), 16; Norge, 12; O'Keefe & Merritt, 8; Sanitary, 8; Snow Bird (Gibson), 16; Starr-Freezer, 14; Tricold, 16; Trukold, 12; Universal Cooler, 10; Westinghouse, 10; Zerozone, 12.

Specifications of the various companies do not follow any particular order, but are grouped according to the exigencies of make-up and space requirements.

900 UNITS PRODUCED DAILY BY MAJESTIC

By George F. Taubeneck

CHICAGO—Around 900 Majestic electric refrigerators a day are now coming off the Grigsby-Grunow production lines, which are running 24 hours a day. Some 500 radios are also being produced daily by the Grigsby-Grunow plants on Dickens and Armitage Aves. About \$80,000 a week is being disbursed to the 2,817 employees on the payroll.

Over 50 per cent of the Majestic distributors more than doubled their B. P. I. (Majestic equivalent for "Quota"—means "Buying Power Index") during the month of April, according to John F. Ditzell, sales manager of the refrigeration division of the Grigsby-Grunow Co. Total sales of all distributors in April averaged more than 150 per cent of quota (B. P. I.).

May, 1931, was the biggest refrigeration month of that year for practically all Majestic distributors. Yet a group of veteran distributors who take 80 per cent of Majestic's output of refrigerators had sales volumes in April, 1932, which practically equalled their volumes of May, 1931.

On a graph Mr. Ditzell keeps, the lines representing sales and inventories of distributors crossed in April this year, which is a month ahead of the 1931 crossing of the same lines. Factory and field stocks of Majestic refrigerators are now at one of the lowest points

(Concluded on Page 2, Column 1)

BUCKEYE ANNOUNCES NEW 4-CU. FT. MODEL FOR \$89.50

MANSFIELD, Ohio—A third model, with a gross capacity of 4.4 cu. ft., and selling at \$89.50 f.o.b. Columbus, Ohio, has been added to the line of Buckeye electric refrigerators by Domestic Industries, Inc.

This model, like the other Buckeye models, has 2½ in. of Balsam Wool insulation. A porcelain food pan and door liner are standard equipment. Hardware is chrome-plated brass. A Ranco 8-point thermostat, American Radiator expansion valve, a Dayton Pump & Mfg. Co. unit, and a Leland 1-6 hp. motor are included.

The new model measures 52½ in. high, 24 in. wide, 21½ in. deep. It has 7.15 sq. ft. of shelf area. Cabinets are made by the D. A. Ebinger Sanitary Mfg. Co.

All joints are "hydrolene" sealed. Interior is of one piece of porcelain.

Other models are No. 53, 5.5 cu. ft. capacity, selling for \$99.50 f.o.b. factory, and No. 71, with 7.7 cu. ft. capacity, selling for \$159.50 f.o.b. factory.

BRUNHOUSE JOINS STAFF OF STEWART-WARNER CO.

CHICAGO—R. S. Brunhouse, formerly sales executive in the Majestic refrigeration department, has been appointed special factory representative for the refrigeration department, Stewart-Warner Co., according to announcement by Charles W. Strawn, sales manager of the refrigeration department.

The appointment of Robert Richter to contact department store outlets was announced at the same time.

Mr. Richter was formerly manager and buyer for the radio and refrigeration divisions of the Bloomingdale department store, New York, and the Abram Straus department store, Brooklyn. At one time he was the refrigeration buyer for the entire A.M.C. chain of which Hudson's, Detroit, and Taylor's, Cleveland, are members.

General Electric Reduces Prices On 2 Models

CLEVELAND—New reduced prices on two refrigerator models have been put into effect by General Electric Co.

On the new price schedule the S-44 with 4.4-cu. ft. capacity, sells for \$167, f. o. b. factory; and the S-67, with 6.7 capacity, for \$235 f. o. b. factory. Both box capacities are according to Nema rating.

War Bulletin

CLEVELAND—(Special wire to ELECTRIC REFRIGERATION NEWS)—Allied armies of Refrigeration moved forward on all fronts last week, making on the whole greater progress than has been made in any one week thus far in the General Electric Monitor Top war campaign, according to announcement from headquarters here.

Large gains into enemy territory were registered along the metropolitan and Atlantic fronts. Soldiers of C. L. McCrea's National Electric field army, Washington, D. C., continue to creep up on the lead of the Merriam field army, Albany, led by Generalissimo A. Wayne Merriam.

Others besides McCrea on the Atlantic front who made large advances include armies led by Lt. Gen. R. S. Montgomery, Richmond, Va.; N. K. O'valle, Harrisburg, Pa.; D. W. Alexander, Atlanta, Ga., and L. W. Driscoll, Charlotte, N. C.

On the metropolitan front, the infantry, cavalry, and engineers of Rex Cole, Inc., New York, entered an eight-day sales drive and sold, during the first four days, more than 250 units. The Cole army finally surpassed the efforts

(Concluded on Page 27, Column 4)

HOTPOINT STARTS DRIVE TO SECURE NEW DEALERS

CHICAGO—All department managers of Edison General Electric Appliance Co., manufacturer of Hotpoint ranges, are now in the field contacting sales outlets to assist in staging sales drives in all parts of the country.

P. L. Miles, range sales manager, is covering the central and Pacific coast districts; H. K. Dewees, in charge of public utility sales, is contacting sales outlets in the southwestern district; W. H. BonDurant, dealer sales manager, the Cleveland district.

W. A. Grove, advertising and sales promotion manager, New York district; M. H. Beekman, retail merchandising manager, southeastern district; and D. C. Marble, product department manager, Rocky Mountain district.

Department chiefs are being accompanied by district representatives, who are: C. P. Myrick, Boston, New England district; W. B. Pierce, New York, east—

(Concluded on Page 2, Column 5)

55% OF KELVINATOR SALES IN HIGH PRICE CLASS

DETROIT—Fifty-five per cent of Kelvinator sales so far this year have been in the higher priced models, according to statistics reported by H. W. Burritt, vice president in charge of sales. During the first quarter last year, only 32 per cent of all sales were in this classification.

Total sales of higher priced units during the first three months of 1932 are 115 per cent greater than in the same period of 1931.

100 RADIO FIRMS TO EXHIBIT AT CHICAGO

CHICAGO, May 18.—More than 100 radio manufacturers have reserved space at the Eighth Annual Convention and Trade Show of the Radio Manufacturers Association, which opens Monday for a week's program, according to B. G. Erskine, chairman of the R. M. A. Show Committee.

Approximately 15,000 visitors, it is estimated, will be drawn to Chicago by "Radio Week" this year. Headquarters will be the Stevens Hotel, and the overflow of visitors and exhibits will be quartered in the Blackstone Hotel as another official headquarters.

Only bona fide radio manufacturers who are R.M.A. members will be permitted to exhibit their wares at this show, or in the hotels housing the convention. Radio manufacturers who make other products, such as refrigerators, will be allowed to use 25 per cent of their exhibit space to show these other products.

Admission to the Trade Show will be limited to the trade. The public will not be admitted, as many of the new products on display will not go into distribution for some weeks. Refrigerators and other electrical products will also be displayed.

New short-wave apparatus, automobile receiving sets, new loud speakers

(Concluded on Page 2, Column 5)

FRIGIDAIRE REPORTS GAIN IN N. Y. HOUSEHOLD SALES

NEW YORK CITY—Frigidaire household sales in New York for April represented an increase over those for March of 107 per cent, and an increase of 48 per cent as compared with April, 1931, it was announced by C. M. Eakin, New York manager.

April represented a high point to date for 1932, it was further announced, and was the fourth month to show an increased over the corresponding month of 1931.

Mr. Eakin attributes the success of the Frigidaire household sales department largely to the company's policy of consistent use of large space in metropolitan newspapers since the beginning of 1931. Frigidaire has used more line in New York newspapers than any other refrigerator manufacturer, he stated.

DEPARTMENT STORE SELLS 468 UNITS IN ONE DAY

BOSTON—The sale of 468 electric refrigerators in one 12-hour selling day (May 7) is reported by Houghton & Button, department store here. Frank J. Kelley is refrigerator buyer.

Prices on the various refrigerators ran from \$69.50 to well over \$200, and the average sale was valued at approximately \$150.

For the sale, which was in connection with a featured one day sale throughout the entire store, 50 additional refrigeration salesmen were engaged, and average sales per salesman ran from 10 to 20 refrigerators, Mr. Kelley reported.

One new salesman who had never sold electric refrigerators before, made \$116 in commissions during the day. The total selling expense did not exceed 3 per cent, and the department's advertising cost was less than 2 per cent, according to Mr. Kelley.

Among the makes of refrigerator handled are Commerce, Frigidaire, General Electric, Kelvinator, and Norge.

GIBSON STEPS UP PRODUCTION TO 24-HR. SCHEDULE

**450 Machines Produced
Daily in Plant at
Greenville**

By John T. Schaefer

GREENVILLE, Mich.—Manufacturing operations on Gibson electric refrigerators have been stepped up to a 24-hour per day schedule in the Greenville plant of the Gibson Electric Refrigerator Corp., C. J. Gibson, president, announces.

At the present time a total of 450 electric refrigerators a day are being produced, including both the Gibson electric and the refrigerators manufactured on contract for other companies. The Greenville plant now employs 1,150 workers.

An increase in sales of 420 per cent for the first five months of 1932 over the same period of 1931 is reported by F. A. Delano, sales manager on Gibson electric.

All parts of the country east of the Mississippi are now covered by Gibson distributors, and about 50 per cent of the territory west of the Mississippi, according to Mr. Delano, so that about 80 per cent of the country's population is covered.

This spring the Belding, Mich., plant of the company was modernized and started up, with some 250 workers on a regular schedule, manufacturing porcelain panels which are transported to Greenville for cabinet assembly. Steel panels are fabricated in the black iron department in Belding under the direction of A. W. Thwaite, Jr., and given their finish in the porcelain department, headed by H. Gilbert.

APEX REFRIGERATION PLANT AT TOP SPEED

CLEVELAND—Washing machine and refrigerator production lines of the Apex Electrical Mfg. Co. are now working on a 22-hour schedule, according to R. J. Strittmatter, vice president in charge of sales.

Shipments of refrigerators for the first four months of 1932 already exceed the quota established for the first six months of the year, he states.

Washer sales for the first four months of the year exceed the sales of that appliance for any other like period in the history of the company.

Refrigeration compressors are manufactured in the Apex Plant No. 4 in Cleveland, and installed in cabinets and shipped from Plant No. 7 in Painesville, a Cleveland suburb.

NELA BUSINESS MEETINGS WILL BE OPEN TO PUBLIC

NEW YORK CITY—Business meetings of the National Electric Light Association will be thrown open to the public at the Atlantic City convention and exhibition, June 6 to 10, according to announcement by E. W. Goldschmidt, chairman of the exhibition committee.

General announcement to this effect is now being made, as well as a second announcement that the exhibition will be open to the general public every day of the convention.

Visitors not entitled to wear convention badges will be furnished with special guest badges for admission to the meetings and exhibition.

Heretofore the general public has been admitted to the exhibition only, and only on certain specified days.

The change was made by the association to increase the advertising value of the exhibition.

Tentative plans for the program have

(Concluded on Page 2, Column 2)

B. J. GRIGSBY SOJOURNING IN GERMANY

CHICAGO—B. J. Grigsby, president and chairman of the board of the Grigsby-Grunow Co., is now sojourning in Germany. It is expected that he will be back on the job in Chicago in the first week of June.

900 UNITS PRODUCED DAILY BY MAJESTIC

(Concluded from Page 1, Column 2)
of the last several months, according to Mr. Ditzell.

Among the leading Majestic distributors which had April, 1932, sales volumes greater than their peak month (May) of 1931 volumes are the Capitol Electric Co. of Atlanta, the Harry Alter Co. of Chicago, Detroit Majestic Products Co., Peirce-Phelps, Inc., of Philadelphia, and the Koerber-Brenner Co. of St. Louis.

April, 1932, sales of the Majestic factory branch in New York City were greater than its sales volume in October, 1931, which was the peak month of that year for this branch.

Other Majestic distributors who had "extra good" Aprils are the Sterling Radio Co. of Kansas City, the R. S. Proudfoot Co. of Lincoln, Nebr., the Radio Equipment Co., of Dallas, Thompson & Holmes of San Francisco, and Unger & Watson of Los Angeles.

"Distributors who are forging ahead this year are those who have become refrigeration specialists," declares Mr. Ditzell. "Radio merchandising methods don't work in selling refrigerators. Only by thorough schooling and re-education have our most successful distributors been able to gain volume on refrigeration sales."

"Sales resistance is tough this year. Efforts must be redoubled to equal or beat last year's marks. Financing is also a major problem this year, and a number of our distributors are finding it advisable for them to help finance their dealers," observes Mr. Ditzell.

For the first time since Majestic refrigerators were placed on the market, according to Mr. Ditzell, sales of the 5-cu. ft. model in the hermetically sealed "de luxe" line are now equalling sales of the 7-cu. ft. model in the same line.

Tentative Program for Annual Nela Convention Announced

(Concluded from Page 1, Column 5)
also been announced.

Although not complete, they include a good number of the features of the convention.

The first general session on Tuesday morning, will have the following program: address of welcome, Mayor Bacharach of Atlantic City; presidential address, J. F. Owens; address, "The N.E.L.A.—Its Work and the Electrical Industry," B. C. Cobb, chairman finance committee.

Report of committee on constitution and by-laws, R. F. Pack; treasurer's report, Edward Reynolds, Jr.; report of public relations section, D. C. Green; address, Charles F. Kettering, president, General Motors Research Corp.; address, B. F. Weadock, executive director.

Wednesday morning, P. M. Downing, vice president, will speak; D. F. Kelly, president of "The Fair," Chicago, will give an address; T. O. Kennedy, will give the report of the commercial national section, and E. W. Goldschmidt will give the report of the exhibition committee.

The third general session, Thursday morning, will be the Edison Memorial session, and will have the following program: address, Thomas N. McCarter; address, "What the Machine Is Doing to Mankind," James S. Thomas, Alabama Power Co.; report of engineering national section, A. H. Kehoe.

At the public policy session Thursday evening, Floyd L. Carlisle will speak, and P. S. Arkwright will make the report of the public policy committee.

The following program will take place Friday morning: report of the memorial committee, W. H. Onken, Jr.; report of prize awards committee and presentation of awards, Frank W. Smith; re-

port of accounting national section, J. H. Lobban.

Address, "Public Interest in Electrical Merchandising," Kenneth Dameron, secretary, joint merchandising committee; address, "New Tools for the New Age," C. M. Ripley, General Electric Co.

At an accounting session Tuesday afternoon, J. H. Lobban, chairman, will give an address, followed by W. Paxton Little, chairman of the advisory council. Discussions will also take place on appliance sales accounting, credits and collections, standardization of financial reports, retirement accounting theory, advantages of property records, budgets, and geographic division cooperation and coordination.

A. H. Kehoe will be chairman of the engineering session Tuesday afternoon. Samuel M. Kintner, vice president of Westinghouse Co., will speak and demonstrate new technical developments; J. C. Parker, president of Brooklyn Edison Co., will talk on "Engineering as a Process of Business." An address will also be given on operating engineer problems.

The commercial session, to be held Wednesday afternoon, will have the following features: chairman's address, T. O. Kennedy; address, President J. F. Owens of N.E.L.A.; report of Electric Refrigeration Bureau, J. E. Davidson; report of home-lighting committee, W. A. Jones; report of National Electric Cookery Council, P. S. Arkwright.

A public relations session Thursday afternoon will include: chairman's address, D. C. Green; address, "Taxation," George T. Buckingham, vice president Illinois Power & Light Corp.; addresses by prize-winning speakers in national employees' speaking contest and presentation of awards by President Owens.

Leads Ice-O-Matic



STANLEY BELL

Sales manager of the Ice-O-Matic division of the Williams Oil-O-Matic Heating Corp.

WILLIAMS TO BUILD NEW HOUSEHOLD UNIT

(Concluded from Page 1, Column 1)
mately 100 per cent ahead of commercial sales during the same period in 1931.

Orders for Ice-O-Matic household refrigerators received thus far in May are also ahead of orders received in May, 1931.

Planning to make special efforts on commercial sales this year, Mr. Bell has appointed four new distributors who will handle Ice-O-Matic commercial refrigerating equipment exclusively (they will not sell the household line).

These new distributors are the Meier Electric and Machine Co., of Indianapolis; R. H. Tait & Sons, Inc., of St. Louis; A. Dirksen & Sons of Springfield, Ill., and the Electric Refrigeration Sales Co. of Chicago.

New Distributor Appointed

A recently appointed distributor for both household and commercial Ice-O-Matic lines is the Bigelow & Dowse Co. of Boston (with branch in Springfield, Mass.).

Since the first of April the Williams factory has been working day and night shifts, and is now producing between 75 and 100 refrigerators a day.

Mr. Bell and R. D. Marshall, of the Williams home office staff, have recently returned from a trip East during which they conducted distributor-dealer meetings in seven cities.

Rutledge Sales Co., Pittsburgh and Redding Radio, Inc., Baltimore, were the first stops, on April 5 and April 12 respectively. G. M. Dierke, district manager, assisted with these two meetings as well as with a meeting at headquarters of Dickel Distributing Co., Philadelphia, April 26.

F. H. Tomlinson, district manager, assisted with the meetings for Linde Appliance Co., New York, April 20; Bigelow & Dowse Co., Springfield, Mass., April 22, and the same firm in Boston, April 23.

Other meetings were planned for Omaha, where the Schmoller & Mueller Piano Co. is distributor, May 18; and at Detroit, for Grinnell Bros., Friday, May 20.

PREBOLA WINS PRIZE IN GIBSON GROCERY CONTEST

(Concluded from Page 1, Column 1)
points, and the others requiring 900 points and 1,200 points were awarded.

Points were awarded for orders received from new dealers. Ranging from 75 points awarded on an SG-35 to 125 points on a larger model, the more models which the salesman could sell to the dealer in his initial order, the more groceries he would receive.

Each man kept his own record, and at the end of the contest had it checked by the distributor, who forwarded it to Greenville, Mich.

A series of mailing pieces was sent to the salesmen all through the contest. The first, explaining the contest, had an enclosed postal card addressed to the salesman's "Lady of Your Heart."

His mother, wife, or sweetheart was asked to sign the card, which said "I want you to know that I am backing (salesman's name) with my full support and cooperation. We've set out to win the biggest prize assortment of Monarch groceries."

The cards were then mailed to the contest editor. This same card gave each salesman 50 points to start him on the contest.

Four more cards, each with a cartoon, and four letters, with the same cartoons on the letterhead, were mailed to keep the salesmen enthusiastic about the contest.

100 RADIO FIRMS TO EXHIBIT AT CHICAGO

(Concluded from Page 1, Column 4)
and amplifiers, new cabinet designs, new products, are expected to be shown.

"Television in its Present Development," will be the subject of a speech by the Hon. Harold A. LaFount, Federal Radio Commissioner, at a joint open meeting Tuesday morning, May 24. J. Clarke Coit of Chicago, president of the Radio Manufacturers Association, will preside at the meeting.

Anton J. Cermak, mayor of Chicago, will welcome the group. Merle Thorpe, editor of *The Nation's Business* will speak on "How is Business" at the meeting.

"Some Broadcast Problems," will be the subject discussed by Harry Shaw, Waterloo, Iowa, president of the National Association of Broadcasters, whose board of directors will meet in Chicago during "Radio Week." The official guests will join with the R. M. A. in a luncheon following the Tuesday program.

Closed Membership Meeting

The annual closed membership meeting of the R. M. A. and election of officers will occur Wednesday morning. Addresses by Frank D. Scott, legislative counsel for the R. M. A. in Washington, and Judge John W. VanAllen of Buffalo, legal counsel of the association, will take place at this meeting. All delegates must attend this meeting under penalty of a fine of \$50.

The Newspaper Radio Editor's Association, of which E. L. Bragdon of New York is president, will hold its annual convention and election of officers Tuesday afternoon. Tuesday evening will be the semi-annual meeting of the Institute of Radio Service Men, of which K. L. Hathaway, Chicago, is president.

Other R. M. A. committees, and other industry groups, will hold meetings during the week.

Leslie F. Muter, Chicago, is chairman of the reception and entertainment committee. Rates on railroads leading into Chicago have been obtained. From New York a 19-car Pullman special will bring delegates, and another special train from Newark is being arranged. Special cars from other sections, including the Pacific Coast, are planned.

Exhibitors

Following is a list of firms which will exhibit at the Trade Show:

Adler Mfg. Co.; Aerovox Wireless Corp.; All-American Mohawk Corp.; Atwater Kent Mfg. Co.; Audiola Radio Co.; Belden Mfg. Co.; Belmont Radio Co.; Bond Electric Co.; Bud Radio, Inc.; Burgess Battery Co.; Cable Radio Tube Corp.; Capehart Corp.; Central Radio Laboratories.

Clago Radio Corp.; Colonial Radio Corp.; Columbia Phonograph Co., Inc.; Crosley Radio Corp.; Crowe Name Plate & Mfg. Co.; E. T. Cunningham, Inc.; Credit Clearing House Adjustment Corp.; DeForest Radio Co.; Tobe Deutschmann Corp.; Echophone Radio Mfg. Co., Ltd.; Electrad, Inc.

Electromatic Record Changer Corp.; Elkon, Inc.; Emmerson Radio & Phonograph Corp.; H. H. Frost, Inc., sales division, Chicago Telephone Supply Co.; Galvin Mfg. Corp.; General Dry Batteries, Inc.; General Industries Co.; General Electric Co.

Gilby Wire Co.; General Radio Co.; Guilbransen Co.; Hamnerlund Mfg. Co., Inc.; Hawley Products Co.; Hickok Electrical Instrument Co.; Hygrade Sylvania Corp.; International Radio Corp.; Jackson-Bell Co.; Jensen Radio Mfg. Co.; Colin B. Kennedy Corp.; The Kenrad Corp.; Kester Solder Co.

Kolster Radio, Inc.; Lenz Electrical Mfg. Co.; Magnavox Co., Ltd.; P. R. Mallory & Co.; Micamold Radio Corp.; The Muter Co.; National Co.; National Carbon Co.; National Credit Office; National Union Radio Corp.; Philadelphia Storage Battery Co.; Pierce Airo, Inc.; Pilot Radio & Tube Corp.; Polymet Mfg. Corp.; Radio Condenser Co.; The Radio Products Co.; RCA Radiotone Co., Inc.; RCA Victor Co., Inc.; Readrite Meter Works; The Revere Radio Corp.; The Rola Co.; Silver-Marshall, Inc.; The Sparks-Withington Co.; Standard Transformer Corp.

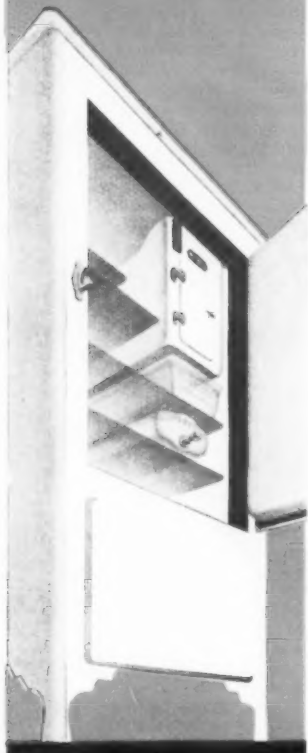
Stewart-Warner Corp.; Stromberg Carlson Tel. Mfg. Co.; Transformer Corp. of America; Triad Mfg. Co., Inc.; Tung-Sol Radio Tubes, Inc.; United Air Cleaner Corp.; United American Bosch Corp.; U. S. Radio & Telegraph Corp.; Utah Radio Products Co.; Webster Electric Co.

Wells Gardner & Co.; Weston Electrical Instrument Corp.; Wright-DeCoste, Inc.; Yaxley Mfg. Co.

HOTPOINT STARTS DRIVE TO SECURE DEALERS

(Concluded from Page 1, Column 5)
ern district; W. T. Christy, Atlanta, southwestern district; B. E. Rowley, Cleveland, Middle Atlantic district.

L. E. Buxton, Chicago, Great Lakes district; C. B. McGrath, Dallas, Texas, southwestern district; B. E. Rowley, Salt Lake City, Mountain States district; J. C. Platt, Seattle, northwestern district, and C. N. Willard, Los Angeles, California district.



THE ROLLATOR

A roller rolls and there's ice...that's all there is to the powerful, smooth operation of the Norge Rollator. It is simple, with only three moving parts...almost everlasting.

• Last year, 1931, almost 50% of the total increase in unit sales in the refrigeration industry was a Norge increase.

More than 65% of the total dollar value increase in refrigeration sales was a Norge increase.

Electric Refrigeration News of February 24, 1932, reported these increases for the industry: 115,000 units in 1931 over 1930; \$15,220,000 in 1931 over 1930.

• Norge sales in 1931 increased 52,000 units over 1930; the dollar value of Norge sales increased \$10,000,000 in 1931 over 1930.

Compare the above figures...they prove the public wanted the superior advantages of Rollator Refrigeration and more of them bought Norge than any other single make of refrigerator.

This year the public demand for the extra cooling power of Rollator Refrigeration keeps right on growing. For every Rollator that is rolling, making ice and giving unwavering refrigeration in somebody's home, a Norge dealer made a profit.

It was a profit he didn't have to put back in excessive service calls, one he didn't have to see washed away in keeping up a staff of mechanical specialists. It was a bankable profit...and not only that, but his Rollator customers are so well pleased with the constant unflinching results of their Norge, that their word of mouth advertising makes his new sales come easy.

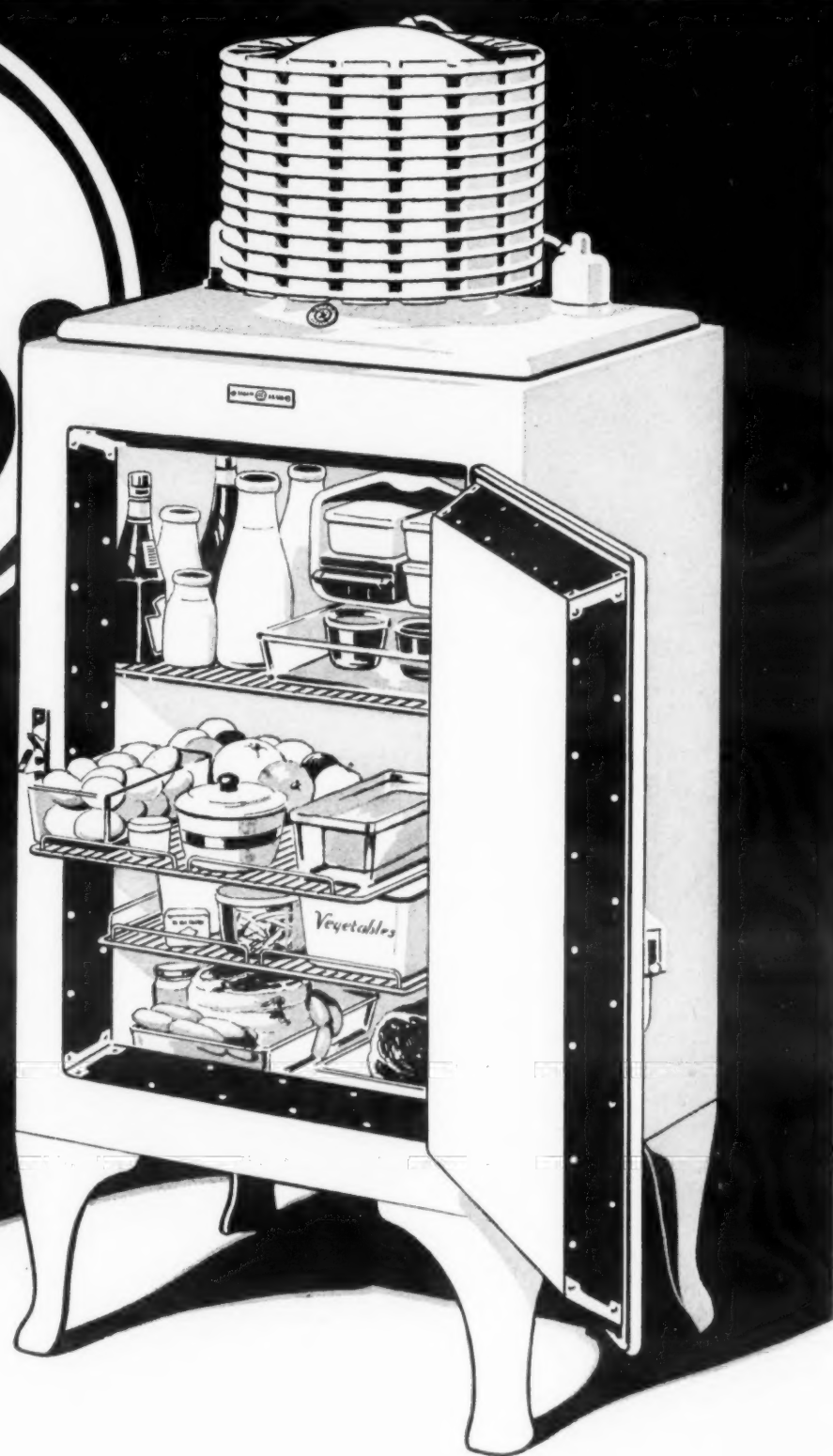
• Norge is a short line of package merchandise. An effective advertising and merchandising program supports it and it has the backing of a powerful and responsible manufacturer. Norge discounts assure profits that interest every progressive dealer who investigates.

Full details of the Norge Dealer Plan on request.

NORGE CORPORATION, 658 E. Woodbridge St., Detroit, Mich.

Norge Corporation is a division of Borg-Warner Corporation, one of the world's largest makers of precision parts, including automotive free wheeling.

NORGE
Rollator refrigeration



General Electric's
4 YEAR
SERVICE PLAN

is the retailer's guarantee of **GREATER NET PROFITS**

NOW GENERAL ELECTRIC adds further value to the retailer's franchise by announcement of an amazing 4-Year Service Plan.

This sensational step forward fully protects every new buyer against any possible failure of the famous Monitor Top mechanism for four full years. If failure should occur, a complete new factory unit is immediately installed. And the established General Electric policy of undivided responsibility affords every retailer generous protection against expensive servicing so necessary on conventional type refrigerators carrying conventional warranties. The 4-Year Service Plan has been made possible by an unparalleled record for uninterrupted service

made by well over 1,250,000 General Electric refrigerators in actual kitchen service over a four year period. This record is the direct result of the trouble-free Monitor Top design. 15 years were spent in research to develop this most simple, compact and efficient refrigerating unit.

Fans, belts, stuffing boxes and water connections, common sources of trouble and service expense, have been eliminated from the G-E refrigerator. It requires no attention—not even oiling.

Every moving part is sealed-in-steel in the Monitor Top. The entire mechanism is out of reach of tampering fingers; of dust, air and moisture. Even the repair man cannot penetrate this hermetically welded shell. Should the Monitor Top mechanism fail,

the General Electric Company alone is responsible.

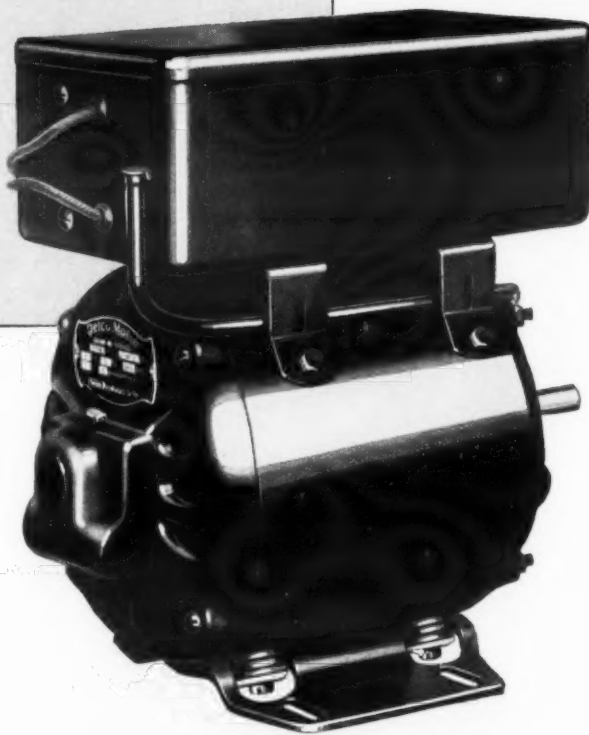
General Electric retailers know from experience that costly service departments are not necessary. They know that the wide public preference for the Monitor Top refrigerator makes it sell quicker and easier. The profit realized from each sale of a General Electric is not jeopardized by the prospect of frequent servicing. General Electric retailers can *keep* their sales profits! General Electric Company, Electric Refrigeration Department, Section CE52, Hanna Building, Cleveland, Ohio.

Millions have joined the ever-widening G-E Circle, presided over by Grace Ellis, N. B. C. Coast to Coast network, daily at noon (except Saturday); Sunday, 7:00 p. m. (E. D. S. T.)

GENERAL  **ELECTRIC**
ALL-STEEL REFRIGERATOR



A REFRIGERATOR MOTOR MUST NOT FAIL



DIAL control of freezing speeds has greatly increased the demands upon the motor in the modern electric refrigerator. Even though the refrigerator owner carelessly leaves the unit running under peak loads, he expects unfailing motor performance. Years ago, Delco anticipated severe requirements like these and, with engineering foresight, designed electric power plants to meet them. That explains why Delco motors are standard equipment on so many leading makes of electric refrigerators today—and why they have established such impressive records for dependability. Moreover, Delco designs each repulsion-induction and condenser-transformer type motor individually to fit the application . . . and offers electric refrigerator manufacturers the advantages of a production program that permits changes on short notice. Bring your motor problems to Delco—we will co-operate with you toward their satisfactory solution.

National field service for Delco Motors is provided through the facilities of United Motors Service branches

**DELCO PRODUCTS
CORPORATION**
DAYTON, OHIO

Employees Will Sell 35,000 Appliances

EAST PITTSBURGH, Pa.—“Every employee to sell one or more Westinghouse household appliances during May,” is the slogan of the 35,000 men and women employed by Westinghouse. “This constitutes the first organized drive by employees of an industrial concern of this size on public indifference to the necessity for immediate buying,” declare Westinghouse officials.

Westinghouse employees volunteered to carry through the campaign. They will offer no discounts and will receive no commissions from the company. All sales will be made through established Westinghouse dealers whose salesmen will cooperate with employees in closing sales on the large appliances.

National Organization Set Up

A national organization has been set up to contact acquaintances of the employees. Each employee will be assigned to a team, which will have a captain and lieutenants, who will report to sales managers. These in turn will report to a campaign manager.

“We are tired of being on the defensive so we are launching a bold counter attack,” said H. C. Thomas, general campaign manager. “We will bring in orders that will start fresh activity, not only in our plants, but in the hundreds of other industries from which we buy materials.”

Month's Goal—35,000 Appliances

“It is a bold undertaking in these days to try to sell 35,000 additional appliances in one month,” said J. S. Tritle, vice president and general manager, “but if we all work hard enough it can be done.”

Looking beyond “Westinghouse Merchandise Month,” F. A. Merrick, president, sees a lasting benefit in the morale of employees after the actual campaign has produced its immediate results.

HARRY ALTER WINS PRIZE MAJESTIC DEALER CONTEST

CHICAGO, May 9—A Waltham “Ship's Bells” clock, the grand prize offered by Grigsby-Grunow Co. to the Majestic refrigerator distributor securing the largest number of new dealers during a recent contest, was presented to Harry Alter, president of Harry Alter Co. of Chicago, at a dealer meeting of the Fish Furniture Stores last week.

Thirty men from the dealer's organization attended the meeting, at which Mr. Alter introduced the features of the Majestic “standard” line. Arthur Alter gave the men selling points, and Max Geisler, advertising and sales promotion manager, presented the advertising helps available.

John F. Ditzell, general sales manager of Grigsby-Grunow Co., was a speaker at the meeting, and presented the prize to Mr. Alter. A 17-jewel Illinois watch was presented at the same time to Ben Mostow, wholesale salesman for the Harry Alter Co., for his assistance in securing the new dealers.

The entire top floor of the Harry Alter building at 18th and Michigan Ave. has been utilized for a recreation hall to be used by visiting dealers and their salesmen. Handball courts and other indoor sport facilities are furnished.

Similar meetings for other Chicago dealers will be held during coming weeks.

MINIATURE SERVEL WINDOW DISPLAYS SENT TO DEALERS

EVANSVILLE, Ind.—Serval Hermetic window displays this season are being represented in a miniature sent to each dealer in advance of the full-size display.

Two of the miniatures have been sent out so far to aid in merchandising the window displays themselves. They are being designed by John DeWitt Gray, associated with the Grier Press, Inc., of Chicago.

A miniature Serval refrigerator, reproduced in cardboard and ready to be opened up into a four-sided toy model, is accompanied by all the parts of the display for that month.

By setting up the model, the dealer can group the parts of the display according to directions, and determine the effectiveness which the display would have in his window.

MAYFLOWER DISTRIBUTOR PUSHES WATER COOLERS

PHILADELPHIA—As “an answer to your thirst for sales,” sell Mayflower water coolers, Philadelphia Distributors, Inc., suggested to its dealers in a recent letter to them.

New prices were quoted, and suggestions as to water cooler prospects were made as follows: business offices, beauty parlors, brokers' offices, theatres, restaurants, doctors' offices, dentists' offices, filling stations, barber shops, auto show rooms, garages, factories, banks, and stores.

PROFIT MANAGEMENT DESCRIBED BY FRAZER

DETROIT—How dealers may choose policies of management which make for profit whether the volume of available business is small or large was pointed out recently by J. W. Frazer, general sales manager of Chrysler Sales Corp.

Although some of Mr. Frazer's points were applicable only to automobile dealers, others were of value to dealers in refrigerators or other merchandise.

Failure to observe one fundamental of good management—the necessity of keeping capital liquid and productive—has shackled or bankrupted more concerns than all other causes combined, Mr. Frazer believes.

Careful Study of Assets

“Although reconstruction activities promise much, the individual business cannot afford to wait for good times as the ‘Go’ sign. In many instances, the present answer is to be found in a careful study of assets and the factors affecting their immediate usefulness.”

He gives a series of items which he thinks at least bears investigation, and which may prove a source of improvement in the capital set-up of any dealer's business.

His first point concerns past due notes: “1929 policies on rejected finance company risks and side notes to cover down payments have little room in today's operations,” he says. “The capacity to pay, of the type of individual who is forced to seek such terms, calls for rigid investigation.”

Compensation in Good Dealers

“Adherence to these more stringent rules may mean the sacrifice of some of the business that ‘walks in the door,’ but it can be compensated for by more vigorous pursuit of sound dealers that must be searched for and developed into sales.”

Past due accounts receivable, in the automobile dealer's business, come mostly from the service department, Mr. Frazer points out, saying “Service charge accounts are often pigeon-holed with doctor and dentist bills. It's all repair work and hard to pay up. The best policy on service work is cash—no exceptions. If there has to be a preferred list, it should very definitely be on a month-to-month settlement basis.”

“Collection of a customer's account will result only from going after the money with more vigor than his other creditors do. It's a business-like way of handling accounts and demands respect.”

Scale Salaries Down

Salaries for salesmen and other employees must often be scaled down to preserve working capital, Mr. Frazer believes. “Withdrawals from a business by its owners must be considered as a possible threat to the entire stability of the business and weighed carefully. For the same reason, advances to salesmen must be given closer scrutiny.”

Mr. Frazer considers the listing as assets of land and building not used in the business, and other investments at their original purchase price instead of their depreciated value, as serving no purpose at all. Unproductive real estate may be a greater asset if converted into cash, he believes.

FRIGIDAIRE CONDITIONER STARTS 4TH SERVICE YEAR

DETROIT—When Detroit had its first really hot weather last week, the pioneer restaurant installation of Frigidaire air conditioners entered its fourth year of operation.

The Industrial Bank Building cafeteria of Rheame's, a basement establishment, was equipped with eight of Frigidaire's earliest cooling units in April, 1929.

According to Peter A. Rheame, president of the chain of thirteen restaurants, the one in which the air conditioners were installed would have gone out of business long ago but for its cooling atmosphere.

While other restaurants in the chain are of 25 per cent in volume, the air conditioned establishment has maintained an increase of from 25 to 40 per cent, an actual increase of 50 per cent or more over the others.

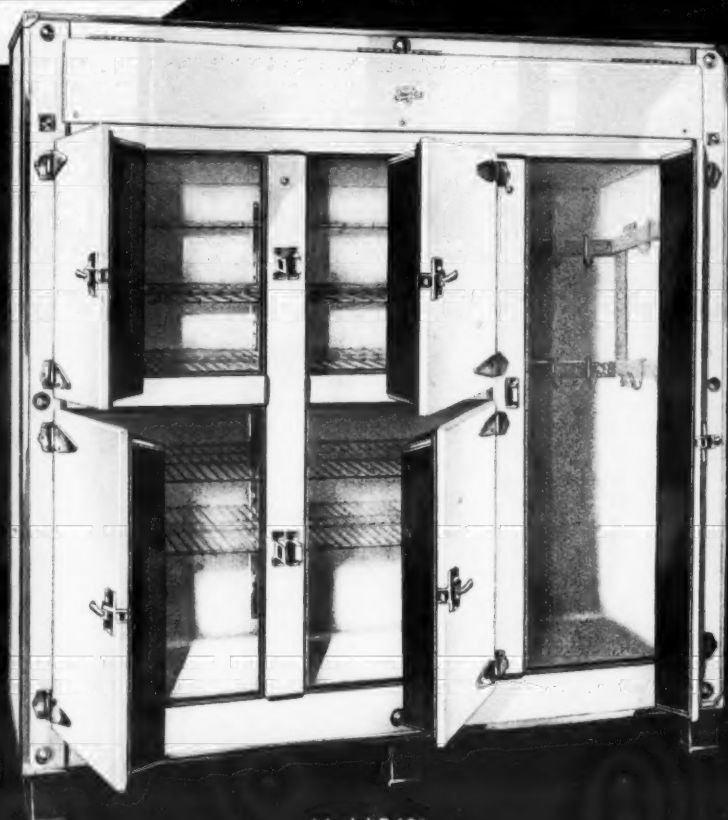
Asked about the desirability of air conditioning machines, Mr. Rheame's reply has been: “No modern restaurant should be without them.”

PASTEURIZATION LAW GIVES 3 MILK COOLER SALES

GREENWICH, N. Y.—Three milkmen were affected when the local health department recently passed an ordinance enforcing pasteurization of milk.

R. A. Snow, salesman for the Greenwich Hardware Co., Frigidaire dealer, realizing that this meant a demand for refrigeration, called upon the three milkmen and took three orders for Frigidaire equipment.

COMMERCIAL CABINETS



Model P 681



Model PG 68



Model SC 30

THE Seeger Line of Commercial Cabinets is so varied and inclusive that almost any Refrigeration Cabinet problem can be solved by immediate shipment from stock.

Only a few of the many Models—each in a range of sizes—are shown here, but we will gladly send literature on Commercial Cabinets upon request. Cabinets illustrated have Flexible Porcelain Exteriors and Acid Resisting Porcelain Interiors.

For out of the ordinary equipment, the Seeger "Made to Order" Division will gladly cooperate with designs and specifications.

SEEGER REFRIGERATOR COMPANY SAINT PAUL, MINNESOTA

232 Fourth Avenue
Fourth Ave. at 19th St.
NEW YORK, N. Y.

655-57 So. LaBrea Avenue
LOS ANGELES, CALIF.

644 Beacon Street
Kenmore Square
BOSTON, MASS.

666 North Wabash
CHICAGO, ILL.

By

Seeger

SAINT PAUL

NEW KITCHEN OPENED BY G. E. DISTRIBUTOR

HARRISBURG, Pa.—Inaugurating a new model electric kitchen and auditorium which adjoin the Harrisburg display rooms, N. K. Ovalle, Inc., General Electric distributor, held a "grand opening" and demonstration recently. Printed invitations were mailed to prospects and users.

Model electric kitchens have also been installed in the Reading and Lancaster retail stores. While not as elaborate as the Harrisburg equipment, both are suited for cookery and refrigeration demonstrations.

New quarters were necessary in Lancaster to accommodate the electric kitchen, and a "grand opening" was held there last week.

In Harrisburg, the kitchen and auditorium were designed by Mr. Ovalle. A model stage is erected so that the kitchen may be completely obscured, and the stage used for any type of meeting or presentation.

The auditorium, illuminated from the ceiling, seats 125 persons. The seats are removable, and the auditorium lends itself to card parties and gatherings.

During the three days of the opening, Dorothy L. Heald, home economics director, and Anna C. Putnam, her assistant, held demonstrations of the Hot-point range and General Electric refrigerator each afternoon.

General Electric refrigerator users, invited to attend one of the afternoon meetings, were shown new uses and economies. Verbal invitations were given in the afternoon meetings to the women to attend with their husbands a final demonstration on Thursday evening.

LOCAL BUREAU HAS LARGE EXHIBIT IN LEGION SHOW

FARIBAULT, Minn.—The Electric Refrigeration Bureau of Faribault leased one of the largest booths at the Southern Minnesota Home Improvement Exposition, which was conducted by the local post of the American Legion recently.

Every member of the Bureau displayed one model. No representatives were present, and no price tags were used; but literature was available for the use of anyone interested.

The local Bureau is continuing its newspaper and outdoor advertising all through the spring, in order to tie in with the national program as closely as possible.

MAYFLOWER DISTRIBUTOR USES TRAVELING DISPLAY

WASHINGTON, D. C.—A "Traveling Sales Van" or truck in which Mayflower refrigerators are exhibited, is now doing duty among prospective dealers for the F. P. May Hardware Co., distributor here.

The fawn-colored truck is illuminated from within and without at night, and standing in front of the dealer's store, attracts attention of passersby as well as from the dealer's own salesmen.

Philadelphia Show Packs 'Em In



Crowds of people attended the fourth annual refrigeration show in Philadelphia recently. The picture shows a group watching entertainment on the first floor of the display.

How To Sell Refrigerators

As Practiced By Grinnell Bros., Ice-O-Matic Dealer

By Phil B. Redeker

ANN ARBOR, Mich.—Satisfied users form the most important source of prospects for the Grinnell Bros. Co., Ice-O-Matic dealer for Ann Arbor and surrounding villages.

In the case of the Grinnell Bros. organization, "satisfied users" means not only home owners who have purchased refrigeration, but also those who may have bought radios, pianos, and washing machines, other household appliances sold by the Grinnell Bros. Co.

Salesmen for Grinnell Bros. believe that the user and "old friends" contact is proving the best method of obtaining prospects during 1932 in the town of Ann Arbor, because 20 refrigeration dealers, operating in a community of about 30,000 persons, have canvassed and recanvassed the town to the bone.

The salesmen do not neglect the possibilities that lie in canvassing, however, and spend about two mornings each week contacting new names.

Grinnell Bros. also covers the territory surrounding Ann Arbor, which includes several small villages. It is in these towns, especially, that satisfied users recontacted and old friends revisited make the road easy for Grinnell Bros. salesmen.

When one considers the length of time that some of the salesmen have worked for Grinnell Bros. in this territory—one salesman 17 years, the sales manager 10 years, and another salesman eight years—it is little wonder that they can call practically every contact by name, or at least make reference to a neighbor or a known friend of the prospect.

Grinnell Bros. representatives believe

that the factors of an established reputation and previous contact with a great majority of home owners are the best arguments for the entrance of an old music or electrical appliance store into the refrigeration game.

The user of another type of appliance is always a good prospect if for no other reason than by virtue of the fact that he has been sold on something once, state Grinnell Bros. men.

The salesman cited a number of cases where on making the last payment for one appliance, the user expressed immediate interest in another line which the store offered.

Members of the faculty of the University of Michigan (located at Ann Arbor) are the most difficult of all persons to canvass, say the salesmen.

Whether because those living in the academic world have an aversion to commercial salesmen, or for some other such peculiar reason, the "cold canvasser" generally gets the "slammed door" when he tries the faculty members' doorbell.

However, it has been found that if the salesman strikes an attitude of intimacy upon contact, such as addressing the prospects by name and making them think that they must "have met the gentleman somewhere" or had some previous contact, the chances are that the salesmen will get inside.

This "presumptuous" attitude has often worked for the salesman in obtaining appointments for interviews, either by telephone or personal canvass.

The salesman, upon getting a tip that a certain family is in the market for a refrigerator, will make a call and state that he has learned of this interest on

the part of the prospect, and asks for an interview.

If the prospect states emphatically that he is not a prospect, the salesman assumes the attitude of having been in error, and withdraws as courteously as possible.

A series of direct mailing pieces is sent to individuals definitely established as prospects. Mailings are followed up by salesmen's calls.

Because the salesman usually knows the prospect on whom he calls, or because he attains the quick familiarity possible in small town relationships, he is able to make four, five or six calls without jeopardizing his cause or losing the good will of the prospect, which repeated calling "big city" salesmen are taught to avoid. Retail sales managers of large distributorships generally advocate a "3 times and out" policy for the salesman.

Minor service calls are handled by a former piano tuner converted into a refrigeration mechanic. Major service calls and difficulties calling for the replacement of the unit are handled by the Detroit distributor, who can be in the Ann Arbor territory within an hour after a call.

OLFSON MADE CREDIT HEAD OF DISTRIBUTORSHIP

BOSTON—Samuel Olfson has been appointed credit manager of General Equipment Corp., New England distributor for Norge electric refrigerators, according to announcement by L. W. Organek of the distributing organization. General Equipment Corp. has its headquarters at 588 Commonwealth Ave.

DIVIDENDS REDUCED BY GENERAL MOTORS

NEW YORK CITY—For the second time this year, General Motors cut the dividend on its common stock last week. The dividend will now be 25 cents per share quarterly.

Three months ago the board of directors voted 50 cents per share quarterly, as reduced from the 75-cent quarterly disbursement which had been in effect since the two and a half for one split-up in the stock in March, 1929.

The statement said the directors felt the cut "was in keeping with the fact that, due to the downward trend in business, the corporation's earnings have not met expectations." The reduction, it added, was also "in harmony with the corporation's policy of maintaining its present strong financial position."

The regular quarterly payment of \$1.25 a share on the preferred stock was authorized.

Preliminary figures on first quarter earnings, recently published, showed net income for that period of \$9,693,027, equal to 17 cents a common share, as compared with \$28,999,409, or 61 cents on each common share in the first three months of 1931.

Until the initial quarter of this year, the common stock had paid \$3 yearly since the two and a half for one split in March, 1929, instead of \$1, as it will pay now. Prior to that time, the shares were on a \$5 basis.

General Motors also paid cash extras equal, on the present stock, to \$1.80 a share in 1928 and \$1.30 in 1929. There was also an extra of 30 cents early in 1930.

The common dividend is payable June 13 to stock of record May 14, the preferred Aug. 1 to stock of record July 15.

EIGHT DEALERS ORGANIZE NORTHFIELD, MINN., BUREAU

NORTHFIELD, Minn.—Eight electric refrigerator dealers are charter members of the newly organized Electric Refrigeration Bureau here.

Organization took place after these men had read the "Code of Ethics" of the Electrical League of Cleveland, refrigeration division, and a committee will work up a similar set of rules for the Northfield Bureau.

A. B. Blodgett was elected chairman of the bureau, and Fred Fremouw, secretary. Meetings will be held every week during the heavy sales season.

MAJESTIC TAKES CENTER OF DISPLAY FLOOR

EAST GREENWICH, R. I.—The center of the display floor at the recent Radio and Refrigeration Show here was occupied by an exhibit of Majestic refrigerators and radios sponsored by McClure's Music Shop, Majestic dealer.

The exhibit faced the entrance to the Armory, where the exhibit was held, and a banner, saying "Just arrived! It's here! Majestic refrigerator," met the eye.

Several sales were made as a direct result of the display.

Larkin Coils are widely used as a Powerful Selling Advantage

Now used in Well Over 30,000 Installations

The wisdom of these manufacturers of electric refrigeration equipment in adopting LARKIN 100% Vertical Surface Aluminum Plate COILS as STANDARD FACTORY EQUIPMENT is more clearly brought home each day . . . Dealers, distributors and users are becoming Coil Connoisseurs. LARKIN COILS solve the problems of excessive Dehydration, excessive shutdowns for Defrosting, consistent with lower operating costs . . . Enjoy this powerful selling advantage. Manufacturers whose trade marks are shown here have facts of value for you.

1 of 93 STANDARD SIZES . . . over 6,000 installation combinations

LARKIN-WARREN REFRIGERATING CORPORATION
Originators and Manufacturers ATLANTA, GA.

100% VERTICAL SURFACE
U.S. PATENT No. 1,776,235.

LARKIN COILS

Copeland
DETROIT, MICH.

SERVEL
DETROIT, MICH.

ICE-O-MATIC
BLOOMINGTON, ILLINOIS

Carrier
BIRMINGHAM, ALABAMA

MAYFLOWER
DETROIT, MICH.

UNIVERSAL
DETROIT, MICH.

KULAIR
PHILADELPHIA, PA.

Zerozone
DETROIT, MICH.

Ob-sopwng
DETROIT, MICH.

Modern
DETROIT, MICH.

STARR
DETROIT, MICH.

MOHAWK
DETROIT, MICH.

Apex
CLEVELAND, O.

DICELER
DETROIT, MICH.

H. M. ROBINSON COMPANY
DETROIT, MICH.

EXPORT
DETROIT, MICH.

COMPELLING ADVERTISING

BRINGS THOUSANDS TO SEE

Westinghouse *Dual-automatic Refrigerators*

NEW! NEWS! NEWS! First the famous Dual-automatic Refrigerator. Four amazing new improvements. And now, *new low prices!*

Westinghouse advertising is the news of the day. News that's bringing thousands of unsolicited prospects to showrooms *everywhere*. Salesmen are doing more selling . . . less canvassing. Orders, deliveries, and profits are zooming. Business is good!

Alert merchandisers are cashing in on this advertising. They are demonstrating the Westinghouse *Dual-automatic* Refrigerator to the prospects it is bringing in. And a demonstration is convincing! For only the Westinghouse is *dual-automatic*. It offers *dual-advantages* in every detail. And to merchandisers this means dual-profit opportunities.

Not only that . . . Westinghouse is backing its dealers with the most resultful sales promotion. Merchandising Plans . . . Direct Mail . . . Window Displays . . . all kinds of material is coming from the factory in endless number.

The Westinghouse franchise is more valuable than ever before. Hundreds have already signed this year. There are still more opportunities open. Why not get complete details? It will pay you in increased sales . . . increased profit! Write, wire, or telephone today!

WESTINGHOUSE ELECTRIC & MFG. COMPANY
Refrigeration Division Mansfield, Ohio

NEW LOW PRICES

Substantial reductions on all household models now in effect.



THIS COUPON BRINGS FACTS THAT YOU SHOULD KNOW

Westinghouse Electric & Manufacturing Co.,
Mansfield, Ohio.

Please give me full particulars about new low prices and extra profit from Westinghouse *Dual-automatic* Refrigerators.

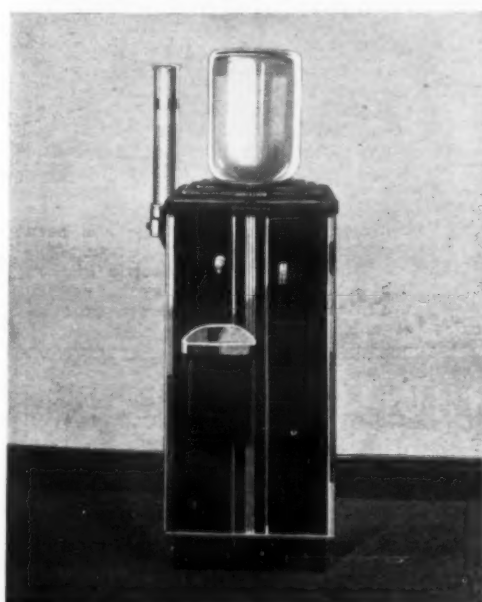
Name

Address

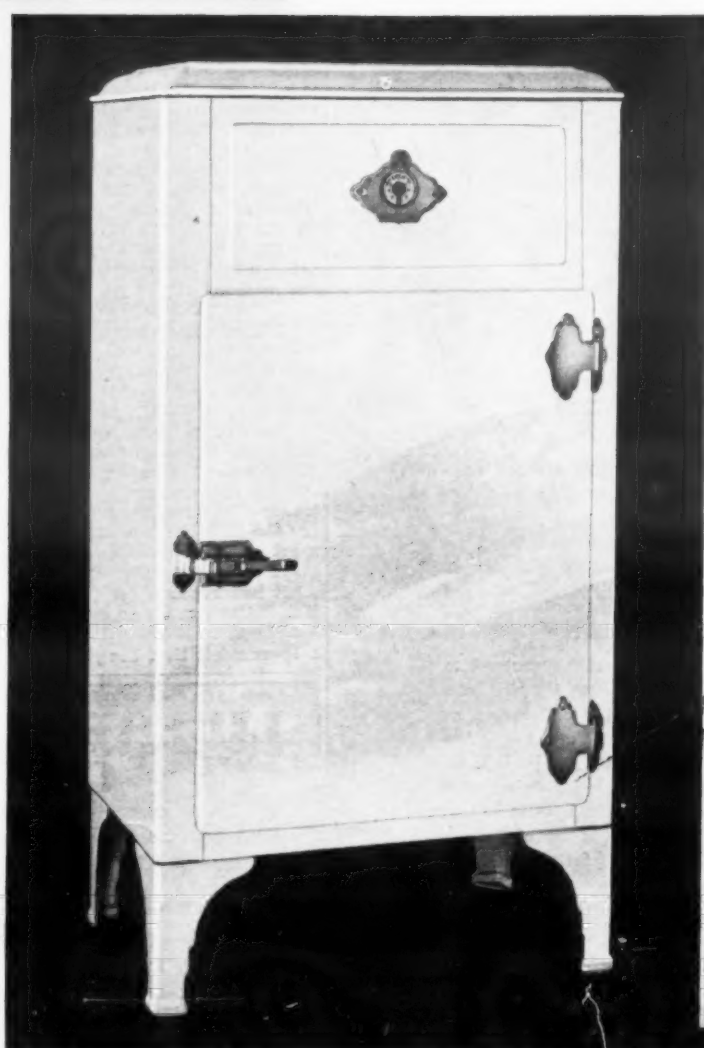
City State E.R.N. 5-18-32



MOST EFFECTIVE ADVERTISING IN HISTORY!
More people are mailing coupons from Westinghouse advertising than ever before. These inquiries are promptly delivered to Westinghouse Dealers for quick follow-up and sales!



DUAL PROFIT. The Complete Line of Westinghouse Water Coolers together with the Westinghouse *Dual-automatic* Refrigerators gives dealers dual-profit opportunities.



225 UNITS SOLD AT PHILADELPHIA SHOW

PHILADELPHIA—An attendance of 33,000 Philadelphia householders and sales from the floor of 225 electric refrigerators were results of the fourth annual electric refrigeration show of the Electric Association of Philadelphia.

Compared with the 1931 show, attendance was almost tripled; actual sales of refrigerators from the floor were more than doubled.

A slogan contest conducted as a feature of the show brought in nearly 9,000 replies to the question "Why should one invest in an electric refrigerator?" An electric refrigerator costing not more than \$250 was awarded to the winner in the contest.

Twelve makes of electric refrigerators were on display: Coldspot, Copeland, Electrolux, Frigidaire, General Electric, Gibson, Kelvinator, Leonard, Majestic, Mayflower, Norge, and Westinghouse.

GIBSON EXECUTIVES SPEAK AT MORLEY BROS. MEETING

SAGINAW, Mich.—Executives of the Gibson Refrigerator Co. were speakers at a Gibson regional dealer meeting held here by Morley Brothers, distributor, recently. More than 100 men were present.

The Gibson factory was represented by Frank S. Gibson, Jr., vice president in charge of sales; F. A. Delano, sales promotion manager; Elmer Born, service manager; Allen W. Church, Gibson advertising agency, and George M. Farrin, Gibson district manager, who officiated as toastmaster.

Morley executives who addressed the meeting were R. C. Morley, Sr.; R. C. Morley, Jr., president of Morley Brothers; L. E. Buetow, purchasing agent; and D. W. Uphoff, sales manager.

New G. E. Distributor Appointed



A. H. Thompson (left), president, and M. E. Thompson, secretary, are officers of new G. E. distributorship, A. H. Thompson-Sterling Co., Louisville.

Dr. Allison Lauds Massachusetts Bureaus

SPRINGFIELD, Mass.—Congratulating Massachusetts on having the best organized state for refrigeration activities in the country, Dr. G. W. Allison, field manager of the Electric Refrigeration Bureau, recently addressed 140 dealers and their salesmen from all of western Massachusetts, at a meeting in the Hotel Kimball.

All local bureau chairmen from the

territory were present at the meeting, which was sponsored by the western division of the Massachusetts bureau, under the direction of Charles P. Golding.

Dealers were present from: Pittsfield, Greenfield, North Adams, Northampton, Adams, Williamstown, Great Barrington, Lenox, Lee, Stockbridge, Palmer, Ware, the Brookfields, the Warrens, Amherst, Hadley, Hatfield, Deerfield, Holyoke, Easthampton, Westfield, and many smaller communities.

Dr. Allison spoke on the origin and history of the bureau, its indirect benefits as a clearing house for problems, and on the large field still open for refrigeration activities.

Kelvinator Issues Findings in Survey Of Meat Markets for Salesmen's Use

By Phil B. Redeker

DETROIT—To arm its salesmen with a documentary type of sales help, and to present commercial prospects with an impartial presentation of the argument for advanced refrigeration equipment, the Kelvinator Corp. has had published a report on a survey, "Costs and Profits in 356 Meat Markets," made for the Kelvinator Corp. by Tradeways, Inc., a research organization.

The published report is being used in connection with the special commercial sales campaign which Kelvinator has been conducting this spring.

The decision to make use of such a survey came last year when the heads of the commercial division were laying their plans for the 1932 campaign, relates John P. Scott, commercial specialist who has been directing the operations in which the survey has played a part.

Need Conclusive Evidence

It had become apparent, Scott states, that under current conditions the commercial salesman was needing more conclusive evidence about the value of his equipment. Salesmen were also learning that each division of the potential commercial market has its own problems, speaks its own "language."

Various types of business enterprises constituting commercial prospects were grouped under the following headings—meat markets, grocery stores, restaurants, milk producers, institutions, offices and industries having need for water coolers, and special prospects, such as florists.

Other Surveys May Follow

It became obvious that to make a survey of these different groups at one time would be too great a task and too costly, and the Kelvinator commercial heads decided to concentrate on the meat market field first.

On the basis of present results it is probable that surveys in the other fields will follow, Scott states.

The services of Tradeways, Inc., research organization which had previously done a job for the Kelvinator Corp. in the domestic field, were engaged.

Study 356 Markets

The trained investigators of this research organization went into 356 markets, large and small, in 19 widely separated states. They studied floor plans, customer attitude, tested the refrigeration equipment, analyzed costs, compiled statistics on profit margins, learned of individual problems by becoming intimate with the proprietors.

They talked, too, with Kelvinator distributors and dealers, to discover what the merchant was looking for when buying new equipment. The course of their research was steered in a measure by the information gleaned from the equipment salesmen about merchants' interests and buying habits.

Seek Other Facts

The researchers went also to trade journals, published statistics, and governmental bulletins for further facts.

When they had finished, they brought in their facts which were correlated and turned into a report—not as a meaningless hodge-podge of bare facts, but written in plain language as an answer to the question of what are the general practices followed by the successful meat dealer.

The booklet explains itself on the front cover by stating that it is: "The report of a nation-wide survey of operating problems and the place of sound refrigeration in building profits for the meat market."

Stimulates Commercial Salesmen

"Its first greatest use was in the stimulation it offered to commercial salesmen," Scott states. "Here at last was something he could show—and talk about."

"To add to this inducement to the salesman to go out and work on the commercial field, we tied in a prize contest on commercial sales," Scott continues. "A good sized bonus was offered for the sale of Kelvinator equipment to meat dealers, and special prizes were given for all commercial sales."

"It has become, for the time at least, Kelvinator's guide to commercial selling—at least in the meat market field."

It was felt that the path of the sales-

man might contain fewer obstacles if such a report could be placed in the hands of meat dealers who might someday be prospects. Its presentation as an impartial piece of research data would appeal to progressive meat dealers.

Various methods were used to attract the attention of meat market proprietors to the report. A full-page advertisement in the *Saturday Evening Post* containing a coupon which offered the booklet to the merchant without any obligation on his part brought many requests.

A sales promotion campaign was launched, in which the "free booklet" theme was the predominating note. A great number of names was gathered at the factory from this source.

These names, in turn, were sent to distributors or dealers in their different locales, and made up a valuable list of possible prospects for the commercial salesman to contact.

The salesman, knowing that this booklet was in the hands of a prospect, and having studied it himself, could then go to this individual and talk with him on a common ground.

The report itself is divided up into many different sections, dealing in turn with an analysis of costs and profits, sales building through display, store arrangement, maintenance of quality and freshness, reducing operating cost of refrigeration, and selection of proper equipment.

Profitable Merchandising

It opens with the statement that profitable meat merchandising will be had if the meat merchant (1) does a better job of merchandising; (2) takes definite steps to lower his costs.

The report reveals that the average gross margin of profit in a meat market is approximately 23.6 per cent of net sales, a rather small margin, and thus calling for the greatest concentration on more effective merchandising at reduced costs.

Some general conclusions are drawn relative to the practices back of successful merchandising. Three important factors, the report points out, were common to every successful store.

These three factors were (1) excellent display of the product; (2) a wide-variety stock; (3) a maintained reputation for fresh, well-kept meats.

Results of Better Display

A great deal of the report is devoted to pointing out what may be gained through better display, and there are comparative figures taken from three stores in widely separated areas showing how better display actually built profits.

Customers are conscious of refrigeration's part in maintaining quality and freshness, the report avers, in presenting a report on customers' reactions to the appearance and condition of meats.

How the merchant can plan greater savings and profits by using advanced means of refrigeration has, of course, a part in the report. The question of shrinkage and ways to minimize it as a waste factor is also discussed.

A digest of the complete report is published in the May 1 issue of *REFRIGERATED FOOD NEWS*.

G. E. DISTRIBUTOR OPENS NEW MILWAUKEE STORE

MILWAUKEE—New quarters for the E. H. Schaefer Corp., General Electric refrigerator and range distributor, here, were opened recently at N. Plankinton and W. Kilbourn Aves. Old headquarters were at 601 N. Second St.

A full-page advertisement in the Sunday *Milwaukee Journal* preceding the opening announced that a General Electric refrigerator would be given away free at the end of the week's grand opening. To enter competition for the refrigerator, it was necessary to call at the showroom and sign a card.

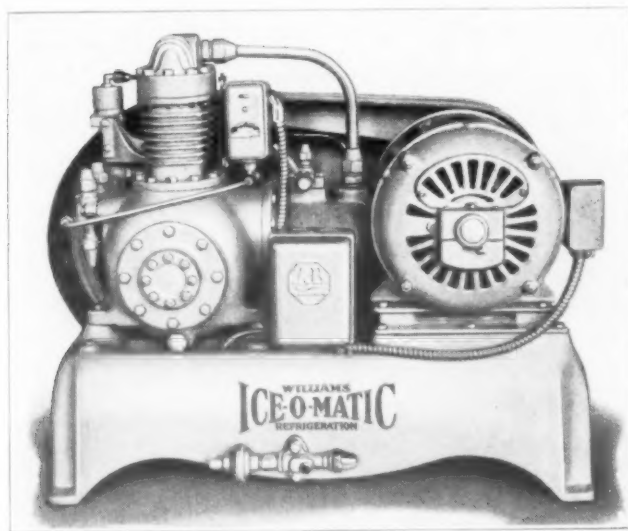
With the entire first floor devoted to a display of refrigerators, ranges, food mixers, dishwashers, water and milk coolers, and commercial refrigeration equipment, the second floor has been given over to a kitchen institute.

A complete General Electric kitchen has been installed, and space will be available in the institute for women's organizations meetings.

Time-Proved WILLIAMS ICE-O-MATIC

COMMERCIAL REFRIGERATION

meets every situation perfectly and profitably



Model FAW combination air and water cooler—1½ H. P. compressor

IN THE entire field of commercial refrigeration, there is no line more thoroughly engineered, more exactly adaptable to every imaginable installation than Time-Proved Williams Ice-O-Matic.

No matter what situation you may encounter, from the large metropolitan market to the tiny delicatessen, there is an Ice-O-Matic to suit your needs. Eighteen distinct compressor units ranging from 1/6 H. P. of 65 lbs. ice melting equivalent to 1½ H. P. of 1,400 lbs. ice melting equivalent (A. S. R. E. rating) offer a selection to satisfy the most exacting requirements.

More than 100 types and sizes of cooling coils to select

from, permits maximum flexibility without compromise in your recommendations.

Ice-O-Matic refrigeration is freely recognized, by refrigeration engineers throughout the industry, as excellently designed, precision built equipment of the finest type.

It enables you to offer more, to sell more and to make more. Make it a point to see the Williams

people at the Convention, or write or wire now to the factory. The full Ice-O-Matic story, on both commercial and household refrigeration, is packed full of profit-opportunity for the alert distributor.



See the new household Ice-O-Matic line, on display at the factory branch, 185 N. Michigan Ave., Chicago
WILLIAMS OIL-O-MATIC HEATING CORPORATION . . . BLOOMINGTON, ILL.

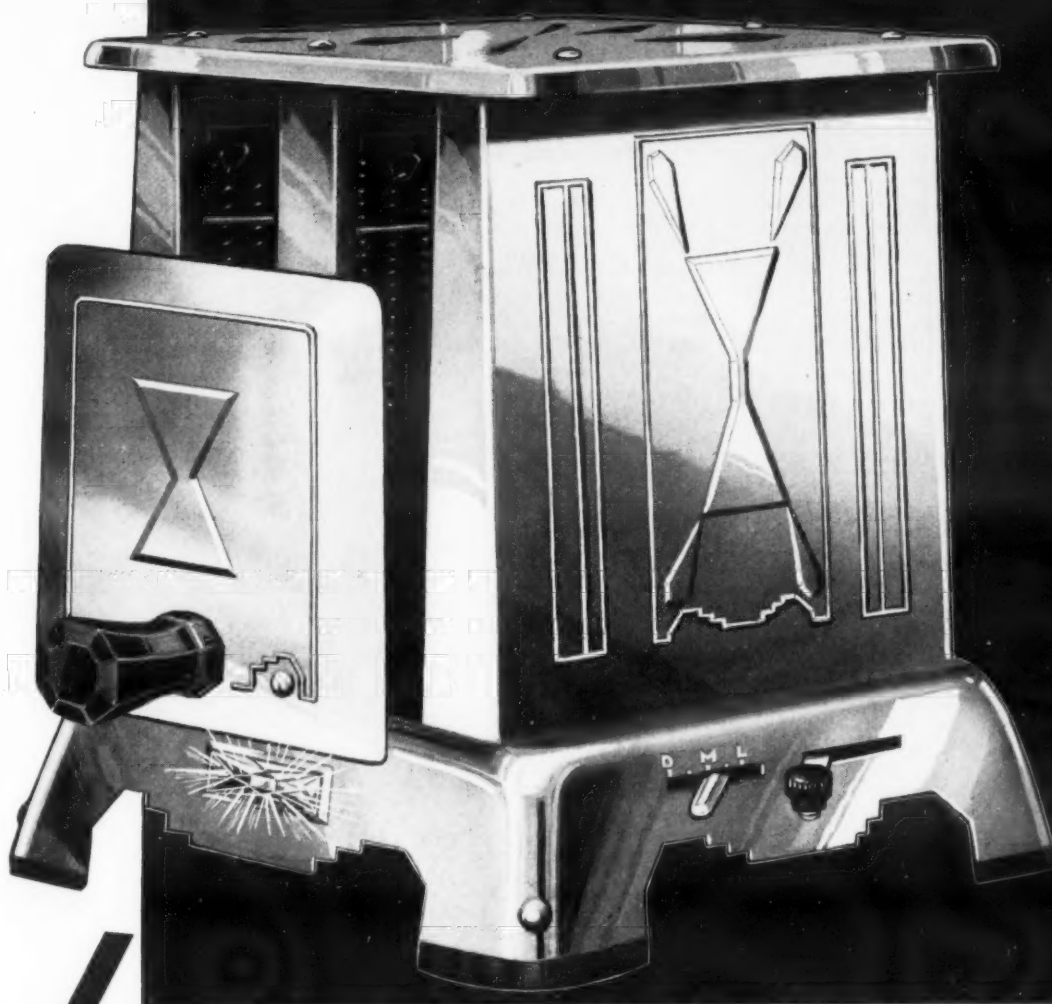
LIBERTY REFRIGERATION CORPORATION

manufacturers of the "Famous Liberty" Refrigerating Unit. Enlarged production. Get in touch with us for your refrigeration requirements. We solicit inquiries from Distributors and Dealers.

Liberty Refrigeration Corporation
Providence, R. I.

Announcing

A NEW ACHIEVEMENT IN ELECTRIC TOASTERS



Toast King

THERE'S A
ROYAL PROFIT
IN EVERY SALE!

AND IT'S MORE
THAN AUTOMATIC
•
TOASTS TWO SLICES
ON BOTH SIDES AT
ONCE

•
TOAST CANNOT BURN
KEEPS TOAST HOT

•
PILOT LIGHT SIGNALS
WHEN TOAST IS DONE

•
MAKES DARK, MEDIUM,
OR LIGHT TOAST

•
MANUFACTURED BY PIONEERS IN
THE ELECTRIC TOASTER FIELD

AUTOMATIC ELECTRIC TOASTER

THE Toast King is a Super Automatic Toaster. Never before has an electric toaster in the moderate price field offered such outstanding value. And never before, at any price, has a toaster offered so many practical conveniences and distinctive sales features. The Toast King is unquestionably the most advanced toaster on the market and its selling points are instantly apparent to every housewife.

In addition to a complete national advertising and sales promotion campaign the manufacturers of Toast King offer a special merchandising plan of unusual appeal to distributors and dealers of electric refrigerators and radios. It is a plan that will not only sell a tremendous volume of Toast Kings but will also move thousands of dollars worth of other merchandise. Preferred dealers will be given exclusive rights to the Toast King plan. Mail the coupon for complete details.

R. M. A. CONVENTION
SEE THE TOAST KING
AT
CONGRESS HOTEL

Double Action Manufacturing Corp.,
Grand Rapids, Michigan

Please give me complete details regarding Toast King

☐ Distributor Franchise ☐ Dealer Franchise

Name _____

Address _____

City _____ State _____

N

LITTLE STORIES OF INTERESTING
PEOPLE
IN THE REFRIGERATION INDUSTRY

THE EXPANSION VALVE

By George F. Taubeneck

LITTLE STORIES OF INTERESTING
IDEAS
IN THE REFRIGERATION INDUSTRY

Curves and Figures

John Ditzell, sales manager of the refrigeration division of the Grigsby-Grunow Co., likes curves and figures and graphs. He has one of the finest collections of charts and statistics on the refrigeration industry—and particularly on the majestic portion of that industry—in captivity.

In one drawer of his desk he has, for instance, a big leather-bound loose-leaf notebook filled with graphs. Every Majestic distributor is represented by a page of graphs in this notebook.

By referring to the notebook Mr. Ditzell can see graphically and at a glance just how many refrigerators each distributor sold every month in 1931, and how many he had sold at the end of each corresponding month in 1932.

Last spring the curves on these distributor graphs were hilly. They went up, then down, then back up again. This spring the curves are all upward, running steadily higher from January through the first part of May without a dip.

How some of these 1932 curves stack up against 1931 curves is told in a story which begins on page 1 of this issue.

Mr. Ditzell can also produce from his desk (or obtain from his efficient secretary, Miss Kopeck, who pulls the right folder out of a pair of filing cabinets with the swiftness and accuracy and uncanniness of a magician popping out the ace you have previously selected from a deck of cards) figures and charts on almost every conceivable phase of the production and distribution of Majestic electric refrigerators.

Instead of a big wall map with a lot of colored tacks in it, Mr. Ditzell has a small map of the United States underneath the glass which covers his desk.

He looks at his charts, studies his map, and then makes a move.

It must be keen enjoyment—like the excitement a general probably gets from routing the movements of an army in an important campaign.

B. P. I.

Majestic distributors strive to surpass their B. P. I. ratings, rather than to beat "Old Man Quota."

B. P. I. means "Buying Power Index." And the B. P. I. figure allotted to each distributor represents the percentage of the total output of Majestic refrigerators which factory officials think each particular distributor should sell.

The following factors enter into the establishment of a B. P. I. for each distributor (each relating only to the territory covered by that distributor): total population, native white population, wired homes, passenger cars, bank deposits, personal income tax returns, and apartment house developments.

Survival of the Fittest

Last week we told how the emphasis in the Norge organization is shifting from extensive to intensive distribution this year—how efforts are being concentrated upon obtaining more volume from the present distributing organization, rather than upon building that organization still larger.

Down in Bloomington, Ill., officials of the Williams Ice-O-Matic organization are going even further than Norge in this shift in emphasis.

Instead of increasing the number of their outlets, Williams officials are actually pruning the list, and have fewer distributors and dealers than they had last year.

Up until January, 1931, Williams Ice-O-Matic refrigerators had been sold direct to dealers as companion merchandise to Williams Oil-O-Matic oil burners. Last year exclusive refrigeration distributors were appointed, and sales shot upward as a result.

Many of these distributors were of the old-line jobbing house variety, however, and several allowed Ice-O-Matics to become merely another item in voluminous catalogs.

Those distributors which failed to establish separate refrigeration departments and set about doing an aggressive merchandising job on electric refrigerators have been eliminated. The Williams distributor list now totals 28.

The same procedure has been followed with regard to dealers. The one-or-two-models-a-year type of dealer isn't considered to be of much help to the Williams organization, and numbers of them have been removed from the Ice-O-Matic list.

Instead of scattering his efforts and those of his staff upon a large

King, Queen, and Mayor



Margery Crampton, beautiful daughter of R. R. Crampton, president of Winters & Crampton (which makes a considerable portion of the hardware used in the electric refrigeration industry), was recently crowned queen of the annual Michigan Blossom Festival. She is pictured above flanked by Max Schmeling, king of the world's heavyweights, and A. J. Cermak, mayor of Chicago, who judged the contest for the queenhood.

number of outlets, some of which were relatively ineffective, Sales Manager Stanley Bell is now concentrating upon the distributors and dealers who have demonstrated that they can do a real job.

Piano Hinges and Cellophane

One of the chief obstacles to the sale of Ice-O-Matic refrigerators last year, Mr. Bell found, was the appearance of the cabinet. Williams is primarily an engineering firm, does not make cabinets, and had up until this year paid attention chiefly to the refrigerating machine.

To remove this obstacle in 1932, production this year was held up until well into February while cabinet and hardware designs were being submitted, rejected, and finally approved. One result is that several distributors have orders stacked up but can't get shipments, just like Ford dealers.

The 1932 Ice-O-Matic cabinet models are simple and graceful and flowing, especially when compared with their predecessors. Among the innovations immediately noticeable are the piano-type door hinges, which extend practically the entire length of the door, and the ice trays wrapped in red cellophane.

The 4-cu. ft. box at \$169.50 f. o. b. Bloomington is the lowest priced model in the present Ice-O-Matic line, while the 5-cu. ft. model, priced at \$197 f. o. b., is the best seller.

Williams cabinets are being made by the Rex Mfg. Co. and the Illinois Refrigerator Co. The plant of the latter concern, which is in receivership, is being operated by a nucleus of former employees.

Sino-Japanese Affair

If you want the low-down on what's going on in Japan and China today, have a chat with B. H. Miles, engineer for the Ice-O-Matic division of the Williams Oil-O-Matic Heating Corp.

Mr. Miles has done extensive traveling for Williams in China and Japan, and has a ready familiarity with conditions, factions, leaders, issues, motives, and trends in the Orient.

As an example of the habit of mind among the yellow peoples over there, he recalls the time he first set up a Williams Oil-O-Matic oil burner for demonstration in China. The natives fled for their lives, believing the oil burner to be a machine gun.

It's hard to teach the Chinese how to operate machinery or do anything but the simplest of tasks, Mr. Miles found. Constant supervision is always necessary. If you tell a Chinese laborer to take a hammer and pound a nail into a board, for instance, Mr. Miles says he will continue pounding with the hammer all day unless you stop him.

Do They Go Broke?

When Charles W. Strawn, refrigeration sales manager for Stewart-Warner, talks to a Stewart-Warner distributor about taking on the new line of electric refrigerators his company is merchandising, he is almost invariably confronted with the statement:

"I hear that every distributor who has tried the refrigeration business has gone broke."

Mr. Strawn wondered what definite proof we had to demonstrate the fallacy in this remark. Whereupon we suggested

ed that he take doubting Thomases to New York and show them Rex Cole's new yacht.

Since entering the electric refrigeration business early this year, Stewart-Warner has achieved almost national distribution for its four models (ranging in price upward from \$99.95).

Between 40 and 50 (the number is purposely left indefinite because a few hesitant distributors may take refrigeration franchises by the time this is published and delivered) Stewart-Warner distributors have added the new refrigeration line to their radios and other Stewart-Warner products.

Mr. Strawn is the type of sales manager who can put on a great show any time and any place. He has an actor's presence, technique, and finesse. The ideas he puts out are enhanced and embellished with his dramatic gestures and his colorful diction.

He is a born salesman. More than that, he has done considerable thinking about the refrigeration industry, and is able to couch his ideas about f. o. b. prices, gross cubic content quotations, and suchlike in language which is at once clear, logical, forceful, and convincing.

Poet's Corner

Ludwig Hommel, gentlemanly distributor for Norge refrigerators in Pittsburgh, has devised a "golf progress chart," which he passes out to friends.

This chart consists of a cross-hatched sheet, with a horizontal top line of squares for dates of games, and a vertical line of squares at the left numbered successively from 145 (top) to 68 (bottom) representing possible golf scores.

It works like this: You go out and shoot 114 for your first game of the season. You record the date in the first square in the horizontal top row, run your pencil down the first vertical row, and put a dot in the square opposite the figure 114. Following your next round (a week later, say) your score is 110. In the second vertical row you place a dot opposite the figure 110.

At the end of the season you can hook up these dots with a line, and have a graph of your season's golf scores. If you progress and improve, your graph will look like the 1930-1931-1932 business curve of almost any industry but refrigeration.

J. N. Ewing, Mr. Hommel's general sales manager, sent us one of these charts last week, and enclosed with it a poem composed by R. B. Berry. Mr. Berry's effusion, "Golfer's Bliss" is hereby entered in the Expansion Valve Poet's Corner Contest. Here 'tis:

1929
Funny fellow, hobnail shoe,
Bag of clubs, nice and new,
Stance that looks like Eiffel tower,
WHAM! He swings with all his power.

1930
Took some lessons from the Pro,
Cut his score ten strokes or so,
Still can slice as well as ever,
Will he be a golfer? Never!

1931
To the office one spring day
Came the postman, bright and gay,
Handed him the golfer's joy,
Hommel's Progress Chart—Oh, boy!
Took the chart out to the club,
Showed it to the other dubs,
Told them now he'd play a game,
Make them hang their heads in shame.
Every day he kept his score,
Beat his mark of day before,
Got so people used to say,
"He will be our Champ some day."

1932
Came the day he won his game,
To the club and self brought fame.
Every place he'd walk or ride
People followed him, in pride.

News-hawks asked him, 'mid the cheers,
"What! you've only played four years?
Tell us, please, for publication,
How you won this great ovation?"

He told them of the fine spring day
When the postman, bright and gay,
Handed him his inspiration
That got his name before the Nation.

"The Hommel Chart," he said with pride,
"Enabled me to get my stride.
My only thought was, I must lower
The score I had the day before."

So all ye golfers—heed advice,
And in the fall 'twill sure be nice
To see YOUR name FIRST on the list,
Hot dog! Won't that be Golfer's Bliss?

Believe It or Not

By Glenn Muffy

Did you know that there is enough heat in an ordinary ice cube to kill a human being?

'S true!
If you don't believe it ask Glenn Muffy, who is, among other things, president of the American Society of Refrigerating Engineers, and should know whereof he speaks.

There are certain ganglion centers in the human body, Mr. Muffy will tell you, which cannot withstand the application of many degrees of heat.

Take a number of B.t.u.'s out of an ice cube at a low temperature point, apply them to one of these ganglion centers, and poof! goes a life.

The human body, Mr. Muffy points out, is a very finely adjusted thermal mechanism.

Definition

Mechanical refrigeration is sometimes defined as "bailing heat out of a box." Here is another interesting elucidation, as made by Major Howard Blood:

"Mechanical refrigeration depends upon a practical means of taking the evaporated refrigerant and changing it from vapor back into a liquid again, so that it can be used over and over again without replacement. The cycle

must be entirely automatic and require no attention whatsoever.

"A somewhat parallel result would be accomplished if the water from the melted cakes of ice was automatically frozen over again and the cake restored to its place in the ice box, thus using the water over and over again.

"Even then, however, the result would not be exactly the same, for the liquids used in mechanical refrigeration produce colder and more uniform temperatures than ice cakes and, indeed, a much superior quality of refrigeration."

What It Takes

H. G. Bogart, Sr., sends us the following short story about one of his men: Intestinal fortitude.

You need it today.
Russell L. Putnam has it.
An orphan at 20 years of age obliged to leave college.

Attracted to refrigeration field.
Made connection with H. G. Bogart Co.'s retail force April 19, 1932.
Studied refrigeration nights.

Remembered two books on refrigeration he had at college.
Wanted them. (OH, MY GOD, HOW HE WANTED THEM!)

No way to get them except to go after them in person.

No money to go.
Started from Toledo for Columbus Saturday p. m.

Walked and hitch-hiked there and back.

On the job 8:30 a. m. Monday with the books.

"No kiddin'!"

Corine Muer

For a long time we have been meaning to say something about Corine Muer, who has supplied the entertainment for almost every refrigeration banquet we have attended in Detroit.

Corine, a girl of comfortable proportions and a glorious voice, used to be a musical comedy star. Now she runs an entertainment agency.

If Kelvinator or Leonard or Majestic or Copeland or the Nema executives, or anybody around these parts with money enough to hire her, want entertainment for a banquet, they call up Miss Muer. She has on tap an assortment of dancing girls, musicians, magicians and card manipulators, songsters, acrobats, etc., to suit any taste.

Corine herself acts as master of ceremonies, cracks wise, kids the baldhead row, and starts the applause. When scenery must be shifted or costumes changed she sings to plug up the gap—and sings well, too.

Piece de resistance of all her programs is Orlando, a 13-year-old Italian boy from Windsor, Canada, with bright red hair and an unspoiled smile, who plays an accordion with as much spirit and élan as any concertinist your correspondent has ever heard.

To compete with Joan Blondell we nominate Miss Muer as a worthy candidate for the title of Miss Refrigeration.

Both gals have worked overtime for the industry. (Miss Blondell has been photographed in almost every conceivable pose with a dozen makes of refrigerators.)

Sculpture to Order

Reading the stack of mail which arrives each morning is one of the exciting phases of an editor's job. One never knows just what to expect next. Consider, for instance, this surprise:

Mr. C. G. Buchanan, of the newly organized commercial department of P. P. Caproni & Brother, Inc., Boston, writes that he is a regular reader of the "Expansion Valve," and that a recent number of this kolyum gave him an idea.

His idea has to do with a drawing of Lord Kelvin which we ran several weeks ago. Mr. Buchanan would like to reproduce that noble head in sculpture!

P. P. Caproni & Brother, Inc., it seems is a 50-year-old concern which specializes in models for art schools, ornamental designs for architecture, death masks, and plastic reproductions of all sorts.

In the past this concern has dealt almost entirely with educational institutions. Now, Mr. Buchanan informs us, the Capronis would like to branch out.

We shall be very glad indeed to receive a bust of Lord Kelvin. If, as, and when it arrives, it will be given a place of honor alongside our Mayflower bookends, Majestic and Electrochef ash trays, Copeland work organizer, Faraday leather letter case, General Electric refillable notebook, and Hotpoint automatic pencil.

Not being a bridge shark, we must depend on the industry for a supply of whatnots.

Riding High



Charles J. Gibson, president of the Gibson Electric Refrigerator Corp., has steered his company to new high production and sales records this year.

A clipping and a letter about TROUBLE-PROOF REFRIGERATION as only Majestic Dealers know it

MAJESTIC PRODUCT SETS SERVICE MARK

J. W. Stoutenburg Says 150
Of Refrigerators Have
Been Placed in City

Only one service call in 17 months is the record set up by J. W. Stoutenburg, manager of the Majestic refrigeration department of the F. N. Arbaugh company. Mr. Stoutenburg, who was formerly manager of the local General Electric store, became manager of the refrigeration department of the Arbaugh company in November of 1930.

According to Mr. Stoutenburg there are now about 150 Majestic electric refrigerators in use in Lansing and only once has it been necessary to make a service call. He pointed out that it is not necessary to maintain a service department here as a change of the freezing unit, which can be made in about one hour from the time the call is received, is the only requirement in the event of trouble.

Mr. Stoutenburg has been connected with the electrical refrigeration business for six years.

[from Lansing State Journal]

● When it's hot in San Antonio, it's HOT! So when Mr. Blanchard, of San Antonio, tells you that the Majestic Refrigerator is trouble-proof, you can know you are listening to some first-class testimony!

● Majestic Refrigerators are manufactured in our own new \$8,500,000 plant... the finest in the industry. The plant is now operating 24-hours-a-day—entailing a weekly payroll in excess of \$65,000.

● Production schedules have been substantially increased each week since February 1st, to meet the unprecedented demand and assure prompt deliveries.

● Visit Majestic Headquarters at the Congress Hotel during the R.M.A. Convention. See the Complete Line of Majestic Refrigerators and Radios and be our guests for a trip through our plants.

NINE times out of ten, the difference between making a profit and suffering a loss is in what it costs the merchant to *keep* goods sold. It's the expense that follows the initial sale that turns black figures to red on his books.

That, however, is not the case with

Majestic dealers. They make money because Majestic Refrigerators *stay sold!* Sell them... install them... and that's all there is to it! They're as near *trouble-free* as any piece of mechanism in the world today... *bar none.*

But don't take our word for that. Read

the letter and the clipping reproduced on this page. They are typical of hundreds of similar testimonials now in our files.

And if you are interested in investigating further... get in touch with the Majestic distributor in your territory. He'll be glad to show you what Majestic Refrigerators in the hands of owners in your vicinity are doing.

We'll rest on the reports you get from your own neighborhood. That's fair enough, isn't it?

Trouble-proof refrigeration... that's what you sell when you handle the Majestic. It keeps your profits safe and your customers happy. It makes a salesman out of every purchaser. For every Majestic you sell sells *another!* Your efforts do *double-duty* when you have the Majestic line.

And think of the line you can offer. It's the most complete on the market today. A Majestic that fits every income... large and small... from the sensational standard model at \$99.50 to the deluxe creations listing at \$159.50 and up. A total of 14 superb models graduated in price to meet existing market conditions... perfectly.

That's why orders are pouring in from everywhere... why Majestic dealers are outselling competition... why our factory is working day and night to keep abreast of the demand.

It explains why 1932 is a banner year for Majestic dealers in all parts of the country alike. And why no foresighted merchant can afford to wait longer to acquire a Majestic franchise if one is still available in his territory.

GRIGSBY-GRUNOW CO., CHICAGO,
and affiliates, with factories at Chicago; Toronto; Oakland;
Bridgeport; London, England; and Sao Paulo, Brazil
Manufacturers also of MAJESTIC RADIOS

SAN ANTONIO MUSIC COMPANY

OWNED BY
ISAAC BLEDSOE

EVERY TYPE OF PIANO

MASON & HAMLIN
CHICKERING
KNAKE
KIMBALL
GULBRANSEN



FAMOUS MAKES OF RADIOS

VICTOR
MAJESTIC
BRUNSWICK
R.C.A. RADIOS
ATWATER KENT

MAJESTIC ELECTRIC
REFRIGERATORS

BRUNSWICK AND VICTOR
RADIO COMBINATIONS

316 WEST COMMERCE STREET

SAN ANTONIO, TEXAS.

March 7th, 1932.

Radio Equipment Company,
San Antonio, Texas.

Gentlemen:

In signing our 1932 franchise we do so with every confidence in the future of Majestic Refrigeration. Having had a splendid business on Majestic Refrigeration during the year 1931, during which time we placed some 300 domestic installations, we feel that we are qualified to say something in regard to service problems connected with Refrigeration.

If there ever was trouble proof Refrigeration Majestic certainly builds it as we have not found it necessary to add even one man to our regular radio service division on account of Majestic Refrigeration.

This experience was the primary cause for us placing an order for an entire car load of Majestic Refrigerators and making our decision to go exclusive Majestic Refrigerator dealers for 1932.

Now that we have the merchandise with the proper price, backed by excellent manufacture and distribution we feel quite sure that the year 1932 holds much for us in refrigeration.

Yours very truly,

SAN ANTONIO MUSIC COMPANY

Per *Isaac Bledsoe*
Manager Radio Department.

GCB.T

Chickering—America's Oldest and Finest Piano

Majestic

REFRIGERATOR

Model 345
\$129.50
(f.o.b. Factory)
Shelf area
10.7 square feet

Price subject to any
Federal or State Tax on
electric refrigerators
that may be levied.



FACTORY WORKERS TO SELL G. E. HOTPOINTS

CHICAGO—Factory employees of Edison General Electric Appliance Co., Inc., maker of the Hotpoint range, are being turned into salesmen and saleswomen during their spare time.

An intensive sales presentation course which has been given to all employees in the factory was designed to train them in the use of the range which they help to produce in order that they might have a better conception of its sales features.

Electric cookery demonstrations were held in the General Electric Kitchen Institute, and a good number have already gone through the cooking school, donning aprons and cooking meals under the direction of Miss Frances Weedman.

With the cooperation of R. Cooper, Jr., Chicago distributor of General Electric refrigerators and ranges, factory employees canvass prospects during evening hours and on Saturday afternoons. Each factory employee obtaining a direct sale is given a commission comparable to that of a regular salesman. Factory workers are also given a bonus for prospect names leading to a final sale.

COPPER & BRASS APPOINTS BUTLER PUBLICITY HEAD

NEW YORK CITY—G. Vincent Butler, for the last two years engaged in survey work for the Copper & Brass Research Association, has been appointed manager of advertising and publicity for the association.

Among the surveys prepared by Mr. Butler for the association have been those covering the uses of copper and brass in the refrigeration and air conditioning industries.

Niagara Frontier Refrigeration Show



Results in the form of sales and prospects were received by dealers participating in the recent Niagara Frontier Refrigeration show. The picture shows a general view of the displays.

GIBSON DISTRIBUTOR USES TRAVELING SHOWROOM

SAGINAW, Mich.—Morley Brothers, Gibson distributor with headquarters here, now uses a "speedy trailer" as an aid in signing up new Gibson dealers.

Gibson truck posters designate the trailer as a traveling showroom. Otto Schultz, wholesale salesman for Morley Brothers in eastern Michigan, reports that the trailer has been of great value to him in signing dealers.

WESTINGHOUSE OPENS THREE ELECTRIC KITCHENS

NEW YORK CITY—Three complete electric kitchens are a part of the new Westinghouse National Sales showroom to display electrical household appliances, 200 Fifth Ave., New York City.

All Westinghouse appliances from electric refrigerators and ranges down to irons and fans, will also be on display. Robert J. Alexander is in charge of the showroom.

G. E. PLANS ALL-ELECTRIC WORLD'S FAIR KITCHEN

CHICAGO—A complete General Electric kitchen will be shown as a part of the Model Housing group at A Century of Progress, Chicago's 1933 World's Fair.

"A woman's kitchen is her office and should have a businesslike arrangement," said P. M. Snyder, director of General Electric Kitchen Institute, in signing for space in the Model Housing group.

Electricity will operate range, refrigerator, ventilation, clocks, timing devices, chopping and mixing apparatus, washers and dryers, and specially designed lighting.

A neat desk with telephone and files for recipes, household budget, bills, etc., will be part of the equipment of the "housewife's office." The decorative scheme will conform to the modernity of the furnishings, it is announced.

General Motors last week took space in the model housing group in addition to its general exhibit of Frigidaire. A Frigidaire will constitute the refrigerating unit in one of the model kitchens as a result.

NEW YORK CITY DEALER HOLDS WEEKLY MEETINGS

NEW YORK CITY—Weekly sales meetings are held for the 40 salesmen of the Kramer Sales Co., Kelvinator dealer here, on Saturday afternoons. The Kramer store is at 71 Eighth Ave.

At these meetings, each man sets his own quota for the next week, and H. M. Lenok, new sales manager, speaks to them on methods of reaching that quota.

Added incentive to the salesmen is that when the year's quota is reached, they will be entertained by George Kramer, president of the company.

PHOENIX BUREAU HOLDS EXHIBIT AT FOOD SHOW

PHOENIX, Ariz.—Bent on eclipsing its achievement of 1931, when with 1,500 sales it surpassed every other city in the country on a per capita basis, the Electric Refrigeration Bureau here has launched its spring drive by participating in a Pure Food Show.

The show was held under the auspices of the Arizona Independent Grocers' Association, and the booth was provided by Central Arizona Light & Power Co.

The following makes of refrigerators were on display: Coldspot, Copeland, Frigidaire, Kelvinator, Leonard, Majestic, Norge, Trukold, General Electric, and Westinghouse.

CHINESE MARKET FOR UNITS IS IMPROVING

By Dr. David M. Maynard
U. S. Assistant Trade Commissioner

HONGKONG, China—Popularity of electric refrigeration is slowly gaining ground in South China not only among the foreign population but also among the wealthy Chinese. In spite of the low Hongkong dollar exchange rate, sales during 1931 were considerably ahead of 1930 and dealers are expecting even a bigger season during 1932.

Sales during March, 1932, of one popular make of American refrigerator were 50 per cent ahead of sales for March of last year. Stocks of refrigerators in the Colony are reported as high.

Apartment House Installation

Only one apartment house has been equipped with a multiple unit refrigerating system. Unfortunately, this has been generally regarded as a failure, and no interest whatever in this type of installation has been shown since the original order.

There are five American makes of electric refrigerators offered in Hongkong. The only foreign competitor is the British "Marcos," the first unit of which arrived in March, and retails for the equivalent of G\$165.00.

As South China enjoys a tropical climate during the larger part of the year, a unit of ample freezing power is needed, the most popular size of refrigerator being 5½ cu. ft.

800 Units in South China

The total number of electric refrigerators in South China is estimated to be between 700 and 800, 95 per cent of which are located in Hongkong. The electric current in most of the coast cities is not satisfactory for their operation, and in the smaller villages the eight or 12-hour electric service precludes their use.

In Hongkong a special power rate is offered by the Hongkong Electric Co., of five Hongkong cents per Board of Trade unit as compared to the ordinary rate of 16 cents per unit.

The cost of operating a 5½-cu. ft. American refrigerator in one case ran approximately HK\$6.00 per month or roughly G\$1.50.

BECKER APPOINTED SALES HEAD OF NEW YORK EDISON

NEW YORK CITY—Announcement of the appointment of Joseph F. Becker to the position of vice president in charge of sales of the New York Edison Co. and the United Electric Light & Power Co., and of Clarence L. Law as general commercial manager for both companies has been announced.

The reorganized set-up affects the commercial activities of the two companies.

C. K. Nichols, formerly manager of the industrial sales bureau, is now commercial manager of the Edison Co., Manhattan; J. N. Musso, formerly manager of the Tremont district office, becomes commercial manager of the Edison Co., Bronx, and A. F. Berry, former assistant sales manager of the United Co., is now commercial manager, United.

C. R. Skinner, Jr., formerly chief of the electric automobile division, becomes manager of the industrial sales bureau, succeeding C. K. Nichols.

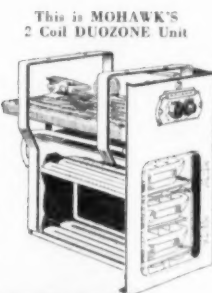
BOSTON KELVINATOR BRANCH NAMES NEW DEALERS

BOSTON—Geoffrey Strelinger, manager of the Boston branch, Kelvinator Sales Corp., has announced the appointment of eight new dealers in his territory.

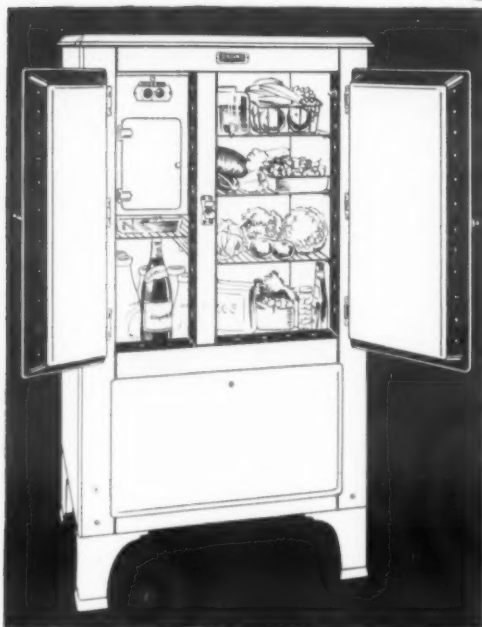
They are: Perry Electric Co., Chelsea; Angelo L. Miceli, Roxbury; C. J. Sullivan & Co., Roxbury; G. Freeland Proctor, Newtonville; Samuel Saperstein, Dorchester; Highlands Auto Supply Co., Newton Highlands; Allied Service Refrigerator Co., Quincy; Community Gas Co., Newburyport.

MOHAWK

has a Sales Story that SELLS!



Mohawk has been tested and approved by Good Housekeeping Institute. Every Mohawk carries this seal.



● **NOT ONE but 2 SEPARATE REFRIGERATING COILS**
ONE FOR COOLING FOOD STORAGE
ONE FOR SUPER-SPEED FREEZING

● Not only are Mohawk Refrigerators good looking, well proportioned, well arranged, beautifully finished and mechanically right—

But every model embodies the Duozone Unit—with two refrigerating coils to give greatly improved refrigerating results. The Upper Coil cools food storage, does not collect frost—and maintains the storage compartment at a safe storage temperature. The Lower Coil, used exclusively for freezing, is built under and over the trays, and concentrates its intense cold directly on the trays to provide super-speed freezing of ice cubes and desserts.

Eleven moderately priced models with every worthwhile refrigeration feature—plus Duozone. Built-in electric lighting in all models if desired. And, when you're showing this two coil refrigerator against a competitive one coil model, you've got an argument that closes sales! Dealer records prove it.

Your territory may be open. Write or wire for details.

SEND ME YOUR PROPOSITION

All-American Mohawk Corporation,
North Tonawanda, New York.

• Kindly send complete information on Mohawk's liberal distributor proposition.

Name.....

Address.....

MOHAWK

REFRIGERATOR

WITH THE DUOZONE UNIT

Product of Wurlitzer

The **FULLEST LINE**
OF REFRIGERATOR
ACCESSORIES
IN THE RIGHT
SIZES
SHAPES
and **PRICES!**



Get the "BECO" story . . . you'll find it interesting and PROFITABLE.

BELLAIRE ENAMEL CO.
BELLAIRE - - - OHIO

LET *Apex* STRAIGHTEN your sales *Curve*

TO INCREASE YOUR PROFITS
SELL THESE APEX PRODUCTS

TO ATTRACT BUYERS ADVERTISE
THESE APEX APPLIANCES



\$169⁵⁰
INSTALLED

L 500 ELECTRIC REFRIGERATOR
4.4 Cu. Ft. Gross Capacity



\$165⁰⁰

S-3 DE LUXE DOUBLE TUB WRINGERLESS WASHER



\$99⁵⁰

No. 35 DE LUXE WRINGER-TYPE WASHER with Vacuum Type Tub and Pump



\$49⁵⁰

BABY WRINGERLESS



\$49⁵⁰



\$99⁵⁰

B 59 BALL BEARING MOTOR DRIVEN BRUSH CLEANER

H-4 FOLDING IRONER

THE THREE GREATEST PROBLEMS of the retailer are, First, to attract buyers. Second, to sell them goods at a profit. Third, to retain their trade. That's why Apex Refrigerators, Washers, Ironers and Cleaners are rapidly finding their way into the nation's greatest retail establishments—

Because—Apex has an outstanding price leader in each of its four major lines—leaders that attract buyers.

Because—Each of its four major lines is built in a range of prices, sizes and types to meet the needs of the most particular or penurious buyer.

Because—There are no wide gaps in the Apex price range. Buyers can be stepped up in easy stages to the more profitable items.

Because—The outstanding performance of each appliance sold makes it easy to sell another and another and another.

Because—Apex gives the dealer a generous margin of profit on every item.

Because—Apex wide-spread warehouse facilities permit quick delivery and rapid turnover.

Because—There's an Apex appliance to support sales during every month of the year.

Because—Apex offers a time-proved merchandising plan that includes a most liberal program of cooperative advertising and sales helps.

By selling a complete line *under one name*, your advertising and selling expense on any single item has a carry-over value to other appliances in the same line. Thus, by carrying the *full* Apex line you will be able to straighten your sales curve and gradually lift it to a more profitable level.

If you want to build a reputation for selling highest quality merchandise at a most attractive price, we recommend that you communicate immediately with the

APEX ROTAREX CORPORATION
1069 East 152nd Street • Cleveland, Ohio

Apex

ELECTRIC APPLIANCES



\$119⁵⁰
INSTALLED

L 410 ROTAREX MODEL ELECTRIC REFRIGERATOR
4.6 Cu. Ft. Gross Capacity



\$99⁸⁵

S-7 DOUBLE TUB WRINGERLESS WASHER



\$79⁵⁰

NO. 25 WRINGER-TYPE WASHER WITH PUMP



\$49⁵⁰

No. 10 WRINGER-TYPE WASHER



\$9⁸⁵



\$29⁵⁰

C 85 HAND CLEANER

A 43 BALL BEARING ALL AIR CLEANER

Apex Cleaners, Washers, Ironers, Refrigerators • More than Two Million in use

MERCHANDISING SECTION ELECTRIC REFRIGERATION NEWS

The Business Newspaper of the Refrigeration Industry

Published Every Week by
BUSINESS NEWS PUBLISHING CO.
Also publishers of REFRIGERATED FOOD NEWS (monthly)
and the REFRIGERATION DIRECTORY (annual)
550 Maccabees Building, Woodward Ave. and Putnam St.
Detroit, Michigan. Telephones: Columbia 4242-4243-4244
U. S. and Possessions and countries in Pan-American
Postal Union: \$3.00 per year; 2 years for \$5.00
Canada: \$6.00 per year (U. S. Money)
All Other Countries: \$4.00 per year; 2 years for \$7.00
Advertising Rates on Request

F. M. COCKRELL, Publisher

GEORGE F. TAUBENACK, Editor
JOHN T. SCHAEFER, Engineering Editor
JOHN R. ADAMS, Assistant Editor
PHIL B. REDSKER, Assistant Editor
GERTRUDE STANTON, Assistant Editor
FREDERICK W. BRACK, Advertising Manager
GEORGE N. CONGDON, Business Manager
Member, Audit Bureau of Circulations

Copyright, 1932, by Business News Publishing Co.

VOL. 6, No. 37, SERIAL No. 165, Part 1, MAY 18, 1932

A Good Business

EVEN though electric refrigeration manufacturers as such will not be allowed to exhibit their models at the Radio Manufacturers Association trade show and exhibition in the Stevens Hotel in Chicago next week, or even in any room of the Stevens, it seems likely that a number of electric refrigerators will be displayed on and around the premises during that time.

Radio manufacturers who make other appliances are allowed to allot 25 per cent of their exhibit space to products not in the radio field. Several radio manufacturers are now marketing electric refrigerators. Notable among these are Majestic, Sparks-Withington, Stewart-Warner, Crosley, Fada, All-American Mohawk (Lyric radios) and, of course, General Electric and Westinghouse. All of these manufacturers are eligible to exhibit refrigerators at the R.M.A. trade show. Others will maintain displays elsewhere on Michigan Blvd.

Numbers of radio distributors who handle the radio lines of manufacturers which do not make electric refrigerators (such as Philco, Atwater Kent, Zenith, and Stromberg-Carlson) have taken on lines of electric refrigerators made by Gibson, Norge, Williams, Servel, Mayflower, Copeland, Kelvinator, Frigidaire, and other manufacturers which do not have radios to sell.

As a result the two industries have had considerable contact.

The Reason Why

The reason is obvious. While the radio industry was "going to pot," refrigeration was climbing steadily upward. The electric refrigeration industry's record during the last two years, when practically all other lines of business suffered heavy losses in sales volume, has attracted radio manufacturers who had large, idle plants to worry about, and radio distributors and dealers who needed a new product to sell in order to restore their lost sales volumes.

Undoubtedly the electric refrigeration picture during the last few years has been bright. Up to 1925 not more than 75,000 electric refrigeration systems had been installed in American homes. In the year 1925 alone, however, another 75,000 systems were installed. Installations in 1926 were almost triple those of 1925. The business nearly doubled again in 1927. In 1928 the number of household electric refrigerators sold was in excess of half a million. Installations in 1929 rose to a figure of 840,000 in 1929, a figure which was exceeded in 1930. A total of 965,000 units were sold in 1931.

Future Seems Bright

What of the future? The answer most usually given is that in the obvious market for electric refrigerators—the nation's 20,441,249 wired homes—there are in use at present only 3,500,000 refrigerating systems, an estimated saturation of 17.12 per cent.

These figures may be contrasted with the 1930 census figures, which showed 12,078,345 radio sets in use by American families at that time, out of a total number of 29,980,000 families—a saturation of 40.3 per cent.

Another significant answer is that the potential market for electric refrigeration equipment is constantly increasing in size following the development and introduction of new applications for refrigeration systems. Dealers who fear that the market for electric refrigerators may pass out on them as did the market for radios are not taking into account that long before such a condition may become a possibility, it is likely that they will have new refrigeration appliances (such as home air conditioning machines) to pioneer and merchandise aggressively.

Can't Judge One by Other

Having entered electric refrigeration through one route or another, it has been a common practice for radio men to hark back to their radio experience, and judge and prognosticate for the electric refrigeration industry accordingly.

"It's going to follow in the path of the radio business," is an expression often repeated.

That such an expression is not justified by the facts should become apparent to anyone who studies the nature of the refrigeration market, the use to which electric refrigerators are put (even the Senate Finance Committee has decided that electric refrigerators are necessities, and not luxuries like automobiles and radios), and the methods by which they are sold.

Almost invariably it has been the experience of radio manufacturers thus far that they have not been able to sell refrigerators in satisfactory volume by the same methods followed in the merchandising of radios, and that it is necessary to set up a separate department trained in refrigeration sales methods to make the business of pushing electric refrigerators profitable. The same experience has been had by a large number of radio distributors, many of whom have abandoned the radio field entirely to specialize and concentrate on the sale of electric refrigerators.

The radio and electric refrigeration industries have been like crossroads: they cross, but do not converge.

Profits and Education

To the radio distributor who sees both the present and the future possibilities of electric refrigeration, it may be said that the electric refrigeration industry is young and growing, that it seems especially strong now, and that it should be even larger and more important in the years to come. It might also be pointed out to him that a number of distributors of electric refrigerators have made piles of money out of the business in the last few years.

It should be further pointed out to him, however, that the experience of other radio distributors who have entered the refrigeration field would indicate that the refrigeration industry and its trends should not be judged in the light of previous experience with the radio industry, and that the best way for him to insure his own success with refrigeration is to forget many of the things he has learned about selling radios, and enroll his crew in a new course of sales training.

Electric refrigeration is a good business. It has developed ways and means all its own. To those who want to get in on this business, there is one magic word which is its Open Sesame. The word is: Education.

GLEANINGS FROM RECENT PERIODICALS

SERVICE AS A SALES LEVER

IT MAY be that the four-year guaranteed service advertised yesterday by an electric refrigerator builder as a sales inducement is the forerunner of other sales campaigns to be built around the free service appeal. Ordinary sales appeals lose some of their pulling magic in times like these. For the last 18 months or so we have seen the strongest of all sales appeals—low prices—rather overworked by everyone with something to sell.

The service appeal makes a good supplementary talking point. The prospective purchaser gains the idea that a manufacturer who will guarantee four years of free service—if any is required—must have unlimited confidence in his product. Combined with low prices, the service offer will help clinch thousands of refrigerator sales.

What General Electric now offers in electric refrigeration will interest other manufacturers. Selling is the one, big common problem of all. Many thoughtful students of the automobile industry feel that the manufacturer's service could profitably be extended far beyond its present limits.—*Cleveland Plain Dealer.*

A New Prosperity Leader

Everybody is looking around for a pioneer industry to lead us out from the wilderness of depression into another promised land of business revival.

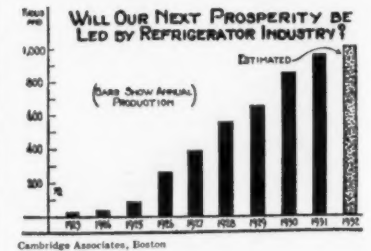
And as they look, an increasing number of these observers, so the Cambridge Associates of Boston tell us, are being attracted by the possibilities of the automatic refrigerator, be it electric, gas, or oil, as the case may be.

Of course, an industry to do this job would have to be big enough to be a real factor, and it would have to have a remarkably bright outlook for the future. But the record of the refrigerator industry as portrayed in the diagram here reproduced, "shows a rate of increase that seems to disregard even depression."

We are reminded that the automobile, radio, and building industry each played a leading part in our recovery from the bad times of 1921.

And then in depressions back in the last century, "the continuous opening of new frontiers and the consequent stimulus to the railroad and other industries were important." As we are further reminded:

The apparent qualities needed for an industry to end a depression are several. It must be sufficiently new to attract workers from other trades, creating new employment to take up the sur-



plus created by the machine. It must be large. And it must have a tremendous potential market.

And this is why some people think the refrigerator industry qualifies, so the Cambridge Associates report:

The refrigerator is about at the same stage of development as the automobile prior to 1921. It does create new employment. And if the number of people owning automobiles may be taken as the future market for automatic refrigerators, there is an enormous market ahead of this business. There are now 3,965,000 electric refrigerators in use, valued at over a billion dollars. But there are about 24,000,000 automobiles in use.—*The Literary Digest*, May 14, 1932.

Letters from Readers

They're Fer Us an' Agin Us

See You Next Month

Atlantic City
April 18, 1932.

Editor:

A very good friend of mine mailed me page 8 of the Merchandising Section of *ELECTRIC REFRIGERATION NEWS*, Nov. 4, 1931, wherein an article appeared written by yourself under the heading of "An Editor on Wheels."

May I thank you kindly for your very complimentary remarks on Atlantic City, and assure you that I deeply appreciate them.

When you are again in Atlantic City, may I have the pleasure of meeting you personally?

HAROLD A. BRAND.

Conover Protests

The Electrical Association of
Philadelphia
Seventeenth St. at Sansom
Philadelphia
May 2, 1932.

Editor:

The April 27th issue of *ELECTRIC REFRIGERATION NEWS* has just come to my desk, and permit me to tell you that Philadelphia has no Refrigeration Bureau, all the promotional work being done by the Refrigeration Division of The Electrical Association of Philadelphia, which was clearly indicated in our recent publicity released to you.

In the second place, permit me to take exception to the editorial "The Association Racket." If this was aimed at national organizations, it should have been clearly indicated as such. After discussing this particular article with all the refrigeration distributors in Philadelphia, they were unanimous in their opinion that this article was not only unfair, but showed a gross lack of knowledge on the subject.

Since your paper feels the way it does about associations, we will see to it that in the future you are not bored with any information regarding the Philadelphia operation.

GEORGE R. CONOVER,
Managing Director.

Modest Blush Dept.

Kelvinator Corp.
Detroit, Mich.

April 28, 1932.

Editor:

I find myself hugely intrigued today in reading, word for word, your pen pictures of Washington and its buildings, its lights and shadows—and personalities.

Your eyes see much, George, see it all quick, and the stories drip off your pen with a freshness and speed that literally spell the joy of youth and living.

Great Stuff!

I know Washington and know that you saw it.

GEORGE R. CULLEN.

Exorbitant Price

"We enclose subscription order covering *ELECTRIC REFRIGERATION NEWS* for 1932; also Express Order covering payment of \$6.00 in American Funds. This rate seems to us exorbitant, but we find this publication to be the best trade paper of its kind."—H. N. Addison, Electrical Refrigeration Dept., Marshall-Wells Co., Ltd., Market and Rorie, Winnipeg, Man., Canada.

Note: The high rate to Canadian sub-

scribers is due to a tariff of five cents per copy (\$2.60 per year), also extra postage collected by the Canadian government.—Editor.

Editor of 'Little Red Riding Hood' Takes Us for a Ride

Scott Foresman & Co.
Educational Textbook Publishers.
Chicago.

April 29, 1932.

Editor:

I recall your admitting, once upon a time, that your history was a weak link in your "edication," but I never realized that it had come to the place where you would say (see Editor on Wheels, April 27) that the White House was partially burned down by the British in 1914.

Haven't you, by this time, received a letter from the British ambassador hotly denying the charge (especially hot, since it involves a fire) and one from Stimson threatening you with investigation by the state department?

As a resident of Chicago, I strongly suspect that Big Bill Thompson has been doing a little missionary work for his belief that George V of England rivals Al Capone for the title of Public Enemy No. 1. Nothing else could cause such a strong case of Anglophobia.

I've talked it all over with Scott Foresman & Co., and can now offer you the editorship of our next history series.

WILLIAM GOBBLE,
Editorial Dept.

P. S. You were only a hundred years ahead of time. The burning took place in 1814.

Editor's Note: Oh. I see.

Ben Ritter Does An Editor on Wheels

B. C. RITTER
Southeastern Representative
General Electric Refrigerators
Denver, Colo.

April 30, 1932.

Editor:

It has been my intention for some time to write you a letter, but, due to our spring sales activity and time spent in traveling, this is the first opportunity I have had to tell you how very much I appreciated your story of Havana and the pleasant visit we had together in Cuba.

Certainly we had a most enjoyable time, and your description of the trip shows clearly why you are editor of the *ELECTRIC REFRIGERATION NEWS*, which in my opinion is the best trade paper in the country. I am just wondering if you couldn't give Brisbane or McIntyre a run for their money in a Column a Day.

I just returned from a trip to Las Vegas, Nev., and Boulder City, the home of the new Hoover Dam, and I will say that the trip was more than worth while from a business standpoint as well as from an educational point of view. Frank Edwards, manager of the Frank Edwards Co., General Electric distributor in this territory, accompanied me on this trip, contacting dealers in southern Utah and Nevada.

Going into Las Vegas from St. George, Utah, you travel 151 miles by auto over a very fine highway. One of the first things you notice is the absence of

(Concluded on Page 15, Column 1)

Letters from Readers

(Concluded from Page 14, Column 4)

houses or farms, and you will realize what is meant by the "wide open spaces." At this time of the year the desert is beautiful and the myriad of cacti in bloom make a flaring of vivid colors with a background of green and multi-colored rock which is a picture never to be forgotten. Truly in the spring "the desert blooms like a rose."

Arriving at Las Vegas you enter a thriving town of about 5,000 population, with good hotels, stores and a busy crowd of merchants.

Two of the leading hotels have already installed air conditioning—surprising, due to the fact that the temperature in Las Vegas reaches around 120° F. in the summer.

A great many of the smaller one-story homes have a framework over which canvas is stretched for additional shade to the structure; and I am told that the favorite outdoor sport in the summer time is to drench this canvas with water to obtain some relief from the heat. Most of the townspeople wear pith helmets such as are worn in the tropics, and there is undoubtedly a reason for this.

As can be imagined, refrigeration is a popular subject in this territory; and our General Electric dealers, Goodfellow and Luce, have done a very fine job of selling General Electric refrigerators, and report prospects good for this season.

Mr. Edwards and I drove over to Boulder City on a Sunday, meeting Mr. Crowe, general superintendent of the Six Companies and the man directly responsible to the contractors for the building of the Hoover Dam.

Mr. Crowe is a genial, serious-minded young man; and, by the way, is the brother of Joseph Crowe, the district manager of the Idaho Power Co. at Boise, Idaho. Crowe's job is the finishing of this work, that is a bigger feat than the building of the Panama Canal from a standpoint of costs and magnitude.

The engineer in charge of this project for the government is Walter R. Young. The headquarters of the Bureau of Reclamation is in Denver, where about 200 engineers are working on this and other government projects.

While in Boulder City we spent the greater part of Sunday as the guests of V. G. Evans, manager of the Boulder City Co.

Mr. Evans is manager of the contractors' activities in Boulder City, a town in government territory taking care of all the needs of the workers. From the multitude of duties necessary for the well being of 3,400 workers, you can readily see that Mr. Evans has some job.

The workers represent a very high class type of men recruited from every walk of life, with a large number of college men who are now attracted by good pay and good supervision on the part of the contractors and government.

Both Frank Edwards and the writer feel a debt of gratitude to Mr. Evans, who spent Sunday driving us all around the project and showing us the wonders of this region.

We first drove up to the top rim of the canyon directly opposite where the structure will be built. Looking down over 1,000 feet to the bottom of this chasm with its forbidden heights is, to say the least, terrifying.

Words fail to describe the peculiar scenery, no vegetation with rock that is solely lava in content, making everything look a peculiar rusty color.

We next drove eight miles and overlooked the country that the waters of the dam would submerge. Enough water will be backed up and retained, that if let out in the East, would cover the entire state of New York one foot in depth.

Finally, we drove down a newly completed road into the canyon just to the place where the Dam will be built and got as big a thrill looking back up as we did looking down.

Back at Boulder Dam we inspected the mess hall, kitchens and dining rooms where the workers eat. The kitchen is one of the finest, cleanest and best equipped places that I have ever seen, and would do credit to any hotel in the United States.

The Boulder City Co. is the General Electric dealer in Boulder City, and has done an outstanding job selling General Electric refrigerators in this city. A few facts about the Hoover Dam, I am sure, will be interesting to you, and are briefly as follows:

The man who first had the idea of Hoover Dam is Arthur Powell Davis, who actively advocated and instigated this work in 1918. The dimensions of the Dam are: 730 ft. high; 650 ft. thick; and 950 ft. across in width. It will be twice the height of any Dam hitherto built, and will contain 3,600,000 cu. yds. of concrete.

The cost will be \$165,000,000, including the All-American Canal. It will water one and one-fourth million acres, no part of which will be developed within 10 years from an irrigation standpoint.

BEN C. RITTER.

'Bargain Price Strikes Out'

By Harvey Lindsay
President, Dry-Zero Corp.

Another pinch hitter has struck out!

They thought he was the greatest ball player that ever came up from Texas. In 1930 he looked like a winner; in 1931 his batting average slumped. But the nation's merchants and manufacturers kept him in the game.

This year they gave him another trial. They insisted they needed his big bat. Into the game he went, at the crucial moment. First, he lifted one of those long, high fouls that came close to being a home run. Again he swung from his heels—and missed. And then—he took the third strike without lifting his bat from his shoulder.

So it looks as though Bargain Price would go back to the sagebrush—a failure in fast company. He took Quality's place at bat and failed. The public is tired of seeing his burlisques. Folks are weary of paying money to watch him strike out in the pinches. They are sick of being fooled and bamboozled,

of being sucked in and kidded by his big talk, by thousands of pages in the newspapers and magazines describing his amazing qualities—all faked.

This is what has happened, according to Albert Leffingwell, vice president of a well known advertising agency:

"Faced with a necessity to buy carefully, to save money at every point, to secure utmost value for every dollar spent—she (the American housewife), has been duped and gypped to an extent probably unparalleled in modern commercial history."

As a result of this, she is suspicious of every piece of merchandise she sees displayed. She is actually afraid to buy. But when she is forced to do so, she steers clear of those things that look like bargains. Her fear forces her to accept—occasionally unwisely, perhaps—higher price as the signal of quality.

One such woman, Laura Alta Johnson, writing in a recent issue of *Advertising and Selling*, declares, "Frankly, I

am sick and tired of CHEAP goods . . . The stores are so full of trash that the woman who wants lasting value wisely refrains from purchasing . . . Women who could buy have placed a virtual boycott on cheap merchandise . . . The manufacturer is substituting, duplicating, reproducing . . . until high quality, originality and individuality are only words. When will they begin to realize we won't take cheap stuff? . . . I believe women prefer quality in small quantities to wholesale sleaziness."

From another angle comes this report. An association of manufacturers of a necessity advises retailers: "The merchant who doesn't realize that price has been parodied until its punch is exhausted has only to balance his books and look about him."

The prospective customer's eyelids do not even flutter when the price cards are shifted to reveal further reductions. Having played the price drama to an anti-climax, the next move must necessarily be in the direction of quality—quality at a consistent price."

So it goes. But scattered among the slaughtered innocents are a few hard-boiled, wisely guided organizations that evaded the lure of price selling.

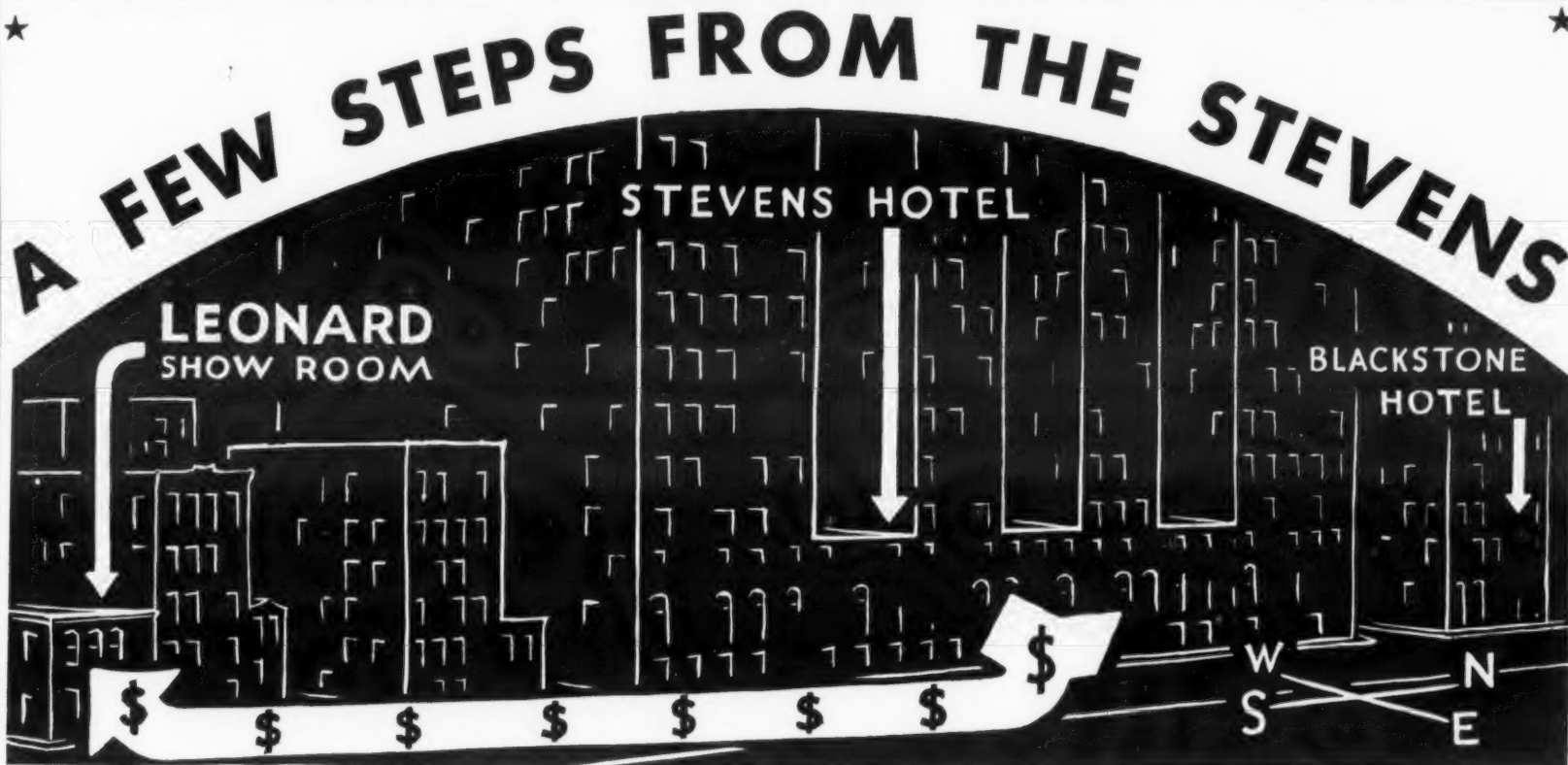
Among these are most of the companies whose stockholders still receive dividends. Among them are both manu-

facturers and retailers. The sorest spot in the side of many a big retail store, for example, is the showing of Fortnum & Mason, English retailer with nerve enough to set up business in New York in 1930. They sell high quality at high prices in a number of things ranging from room cooling. This is not from groceries to clothing. In 1931, they not only increased profits, but also their employees' salaries!

This awakening of the public, the manufacturer and the retail merchant (of course, some of the latter two are still clinging to their hasheesh dream of volume at any price) I cannot help but view with a pleasant sense of anticipation the good things to come for the electric refrigeration industry.

When it is realized fully that price is no longer the open sesame to sales, but may actually bar the door if the mark on the tag is suspiciously low, good manufacturers will stick to the honest quality of their products for sales arguments. And such arguments—it begins to appear certain—are the best even in the midst of a depression.

Personally, I'm glad Bargain Price struck out. For now that he has been exposed by general business and proved the fake he is, no wise manufacturer in the electric refrigeration league will ever let him take Quality's place at bat.



At 822 Boule' Mich.—Profits Await You

(and that's News in 1932)

OUT the front door of the Stevens Hotel—turn to the right! One short block south—and you come to the Leonard showrooms—across the Boule' Mich. from the big bronze horse!

Many will take that little stroll, to their profit, during the Radio Trade Show. We believe we can make it well worth your while to be one of them.

Leonard Electric refrigerator sales, you know, have shown the greatest percentage of increase recorded in the industry this year. And better than 4 out of every 5 Leonard distributors are experienced, successful radio distributors. To them and their dealers has gone a substantial share of the profits from this rapidly growing business.

Leonard's spectacular success with both trade and public is due to the prestige of the Leonard name, the quality and many unusual sales features of the product, the completeness and compactness of the line, new low prices, liberal franchise terms, and strong advertising support for the distributing organization.

If you are interested in this opportunity, which is attracting the highest type of business men in the radio and electrical fields, ask for details of the Leonard franchise. You will be cordially welcomed at our nearby display rooms, 822 Michigan Boulevard.

LEONARD REFRIGERATOR COMPANY, 14256 Plymouth Road, Detroit



Only the Leonard has the LEN-A-DOOR—the greatest feature in refrigeration. A touch of the toe and the door swings gently open



Other extra features which make the new Leonard Electric the outstanding value in the industry include the Chill-om-eter, one-piece all-porcelain interior, porcelain cooling unit with chromium plated door, sanitrays and rubber trays, heavy bar-type shelves, egg basket, electric light (porcelain models), table top, semi-concealed hinges, high legs, steel and wood cabinet construction, Leonard approved insulation, Leonard pure white lacquer, vegetable crisper, salad chiller, steel and wood doors, floating condensing unit, and mechanical unit backed by 18 years of experience.

LEONARD

ELECTRIC REFRIGERATOR

(489)

1931 PROFIT SHOWN BY ASSOCIATED GAS

NEW YORK CITY—The preliminary report of the Associated Gas & Electric Co. for the year ended Dec. 31, 1931, shows a balance for Class "A" stock and surplus of \$3,812,939, equivalent to 84 cents a share. For 1930 the balance was equal to \$2.30 a share on the Class "A" stock.

The company explains that a substantial portion of the decrease in earnings per share from those of the preceding year was the result of increased provisions for depreciation.

Operating income after operating expenses, taxes, and depreciation but before deduction of fixed and other charges, and exclusive of "other income" totaled \$34,737,768, as compared with \$36,918,956 in 1930.

For the first time since their acquisition, the consolidated statement of earnings and expenses includes the full operations of General Gas & Electric Corp. and the Eastern Utilities Investing Corp. Heretofore these two companies have been treated as investment companies, and the income from them has been included as other income.

The balance sheet as of Dec. 31 shows that purchase money obligations have been reduced to \$1,355,551, compared with \$8,831,793 outstanding at Dec. 31, 1930. Notes payable were reduced from \$15,000,000 to \$7,450,000.

COOKING SCHOOL HELD

COLUMBUS, Ind.—Larkin & Thomas, dealer for Kelvinator electric refrigerators here, sponsored a cooking school in Crump's Theatre recently, with Miss Marie Suttles, factory home economist, in charge. A full auditorium witnessed the demonstrations in cold cookery.

How To Operate a Distributorship

As Practiced By Morley Bros., Gibson Distributor

By Gertrude Stanton

DETROIT—Building up an organization of live and well-established dealers, a job calling for careful selection, is the step which comes before anything else in opening distribution in a new territory, according to Harry Lee, in charge of Gibson refrigerator sales promotion in the Detroit metropolitan area for Morley Brothers, newly appointed distributor.

"Our first step is to interest a group of good dealers," Mr. Lee reports, "even before we start a definite advertising campaign. This may seem like putting the cart before the horse. It does make the job harder for the distributor at first, since it means interesting dealers in a line about which they may not have heard much in the territory. Nevertheless, we find that we profit in the end."

Start Advertising Campaign

"By waiting until several dealers are set up before we start an advertising campaign, we can thus tie in with local names, and the dealers and ourselves profit more from a given advertising investment than they would from manufacturers' advertisements with no local tie-in."

The company will cooperate with the new dealers in the advertising campaign, which will consist of newspaper display advertisements, a cooking school and its resulting publicity, and perhaps direct mail.

The problem of Morley Brothers differs from that of some refrigerator distributors, Mr. Lee pointed out, in that the firm is an old established one in the wholesale field, with many contacts among dealers and other lines upon

which to depend while developing the new line slowly.

The firm was founded 70 years ago at Saginaw, Mich., by two brothers. Since that time it has grown to cover the states of Michigan and Wisconsin. Warehouses are maintained in five cities—Milwaukee, Green Bay, Detroit, Saginaw, and Grand Rapids—and between 150 and 160 salesmen operate over the two states.

Present Officers of Firm

At the present time R. C. Morley, Sr., a member of the second generation of his family to operate in the firm, is chairman of the board, and his son, R. C. Morley, Jr., is president of Morley Brothers. Louis Buetow is buyer of refrigerators, and David Uphoff, sales manager of the concern.

In Detroit, where the firm has just taken on the Gibson line about a month ago, E. W. Baker is manager of the branch. The firm handles, besides refrigerators, hardware supplies and household furnishings.

Saginaw Branch

In Saginaw, the firm has been distributor for Gibson over eastern Michigan for a year, but has just entered the Detroit metropolitan area. Working the field less than a month, Mr. Lee and the eight salesmen in the territory have already built up a good start toward a dealer organization, he believes.

"In choosing dealers," he says, "we fall back on our acquaintances among dealers in other lines. The salesmen working the field for Morley's other lines can recommend which of our dealers they believe would succeed in refrigerator merchandising. In many cases they know other dealers not connected with Morley Brothers who would be good prospects."

Check Credit First

"Before even calling on a dealer, we look him up through credit associations, in order that we may not waste time on an organization which has not a sound financial standing."

Selling to dealers on consignment is against the policy of Morley Brothers, and Mr. Lee reports that this fact finds favor with prospective dealers. Instead, dealers are offered "dating" of from 30 to 60 days, or, if they prefer, may get a finance company through which to work.

Under the dating plan, "if a dealer reorders once a week, it is easy to see that at the end of 60 days he owes us plenty. Over a period of time, however, we believe that this method, which enables a small organization to do a larger business than it could otherwise swing, makes for greater profits."

Morley Brothers has no showroom in Detroit—only a warehouse.

Study Product

"It is our policy never to invest money in anything until we can show that it will bring a good return," said Mr. Lee. "Sometime we will probably have a showroom here, but right now we feel that it is more important to assist dealers with their displays throughout the territory."

In any case the firm will not open a retail salesroom, Mr. Lee stated. "We emphasize to our dealers that Morley Brothers will not compete with them in the retail field," he continued. "We are doing a wholesale business only, and have no desire or reason for maintaining a retail department here in Detroit."

"The problem of dealer and salesman education begins almost as soon as the territory is opened," Mr. Lee showed. "Some dealers who have had some experience in selling refrigerators need little instruction except in the new line itself. Others, however, must start from the very beginning."

Aid New Dealers

"I hope to get the dealers and salesmen into a sales meeting as soon as possible, to tell them at one time, the rudiments of selling Gibson."

"With the dealer who is new in the field of refrigerator merchandising, the distributor must be willing to answer a great number of detailed questions. These are questions which will answer themselves in a few months' time, but to the dealer they are most important. It takes patience, but is a vital part of getting the dealer started right."

If the dealer wishes help in hiring his salesmen, Mr. Lee will help him, particularly if he wants men with experience in selling Gibsons or in refrigerator selling in general.

Hold Sales Meetings

Later, when he wishes to train his men, the distributor will hold sales meetings for him, or, if desirable, meet with small groups to answer detailed questions on individual problems of the salesmen.

Attention is paid to the location of the prospective dealer for various reasons, the chief one, in Mr. Lee's opinion, being that dealers situated in various parts of the city are a good advertisement for the line.

As in billboard advertising, he believes, the location of the dealer is important, and to have a dealer's showroom in each part of the city means that more people will be impressed with the name Gibson.

No Closed Territories

Another reason for careful selection by location is that Morley Brothers does not award closed territories to dealers.

"Closed territories only cause trouble later on," Mr. Lee stated. "Some one always steps over the line, and the matter comes back to the distributor for arbitration. We refuse to grant exclusive representation, and the dealers see our point."

"Each of them can obtain his business anywhere in the distributorship if he wishes. Practically speaking, he will concentrate in his own neighborhoods, and this is the reason why we are careful to have our dealers a good distance apart. A dealer has his neighborhood to himself until he shows inefficiency."

Delivery Problems Solved

Delivery problems are ready-solved for Morley Brothers' dealers in the metropolitan area. The firm already has its fleet of trucks going all over the city, and the additional expense of delivering refrigerators for the dealers will not be much, Mr. Lee believes.

"In general, when opening a new territory or in starting the distribution of a newly acquired product, we prefer to go slowly and conservatively," Mr. Lee concluded. "We started a little late for the refrigerator season this year, but we are making good progress and laying a foundation for both dealer and distributor profits over a period of time."

ICE CUBE BREAKER TO BE MANUFACTURED BY NORTH

PHILADELPHIA—The Lightning Ice Cube Breaker, a device for home use in crushing or chipping ice, is being manufactured and marketed by the North Bros. Mfg. Co., maker of Yankee mechanics' tools and hardware.

The device is something like a meat-chopper in appearance. The ice cubes are put into the breaker and crushed by an easily-turned crank. A heavy base makes the ice cube breaker stable, and is furnished with a glass bowl to catch the chipped ice.

Specifications show that the device is 9½ in. high, 5½ in. wide, and 6¼ in. long. It weighs 7 lbs. Base, crank and handle are finished in green and red. The manufacturer states that the breaker is easily cleaned and is heavily tinned.

Advertising for the new device will be carried in the *Saturday Evening Post* May 21 and June 25. Featured in the first advertisement will be the uses of chipped ice for banking oyster cocktails, the breakfast orange juice, etc. The second advertisement will feature its use in making drinks frosty cold.

KELVINATOR CONTEST ENTERS SECOND LAP

DETROIT, May 18.—Kelvinator commercial salesmen enrolled in the year-round "Business Builder Contest" will concentrate on the sale of milk and water coolers during the second period of the contest, which begins today.

Although other commercial fields are not neglected during the period, particularly intensive work is expected to be done in the liquid cooling field, and salesmen will be rewarded with prizes at the end of the weeks set aside for this activity.

Close Meat Market Drive

The commercial salesmen have just closed a portion of the contest in which they specialized on meat market installations. A complete operating manual for the water cooler and milk cooler campaign is available, as well as sales promotional helps of various kinds.

A book, "Marketing Milk at a Profit," gives the result of a survey of the dairyman's milk cooling problem in all parts of the country, and was prepared by Tradeways, Inc., as a companion piece to a similar booklet on meat market profits.

Another booklet, "Cold Water and Your Profits," is a report of a survey of offices and industrial plants analyzing the effect of a proper water supply on the productivity of workers.

CANADIAN PAPER DEVOTES SECTION TO NORGE UNITS

EDMONTON, Alberta, Can.—A special section of the *Edmonton Bulletin* was devoted recently to Norge electric refrigerators, which are being manufactured in Canada by Norge Corp. of Canada, Ltd.

Taylor & Pearson is distributor in Alberta, and sponsored the six-page section.

An explanation of Norge operation, and a history of Norge Corp. were included. Advertisements by various Norge dealers and distributors in the Dominion were also a part of the section. Emphasis was placed on the statement that the refrigerators are not only being assembled, but 96 per cent manufactured in Canada, utilizing Canadian products and labor.

ALL-PORCELAIN HOUSE TO BE SHOWN AT WORLD'S FAIR

MIDDLETOWN, Ohio—An all-porcelain house will be exhibited at the Century of Progress, Chicago's 1933 World's Fair, by the Ferro Enamel Co. and the American Rolling Mill Co.

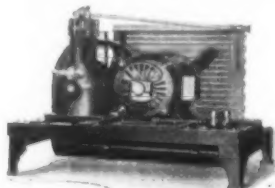
The demonstration house will have an exterior of porcelain enamel fused on Armo Ingot Iron.

An all-porcelain house is now in the process of erection by the Ferro Enamel Corp. in Cleveland. This is not to be confused, however, with the experimental frameless steel house which the American Rolling Mill Co. is about to erect there.

The Universal Cooler Line COVERS EVERY MARKET

THE unusual completeness, economy and dependability of the Universal Line means success to Universal Dealers in every phase of domestic and commercial refrigeration. In addition to a thoroughly modern and complete domestic series, the Universal Line includes milk coolers, water coolers, coils of every size, compressors ranging from 1/6 to 1 1/2 H.P. and special units for all commercial purposes. We will shortly announce a larger condensing unit suitable for all commercial purposes and especially adaptable to air conditioning work.

Write for further particulars

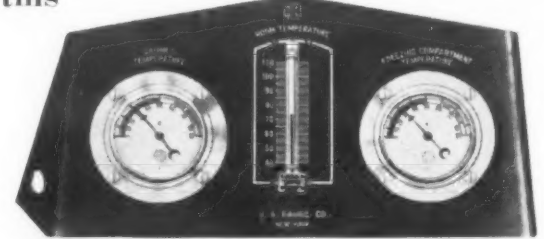


Universal Compressor No. 150. A 1 1/2 H. P. Model

Universal Cooler Corp.

Detroit, Mich. - - - Brantford, Ont.

DEALERS! DEMONSTRATE Temperature of INTERIOR OF CABINET FREEZING COMPARTMENT and ROOM with this



U. S. PORTABLE THREE THERMOMETER PANEL

THIS device placed on top of refrigerator enables you to show your prospects the difference in these three temperatures and makes it easier for your showroom demonstrators to close sales.

No alteration to the cabinet or mechanism—no holes to drill—no installation labor.

Many of the country's most successful dealers are employing this convincing demonstration to prove the efficiency of their refrigerators and speed up sales volume.

Order today—PRICE \$10.00 prepaid

WE ALSO manufacture individual cabinet temperature thermometers as well as panels containing the same three instruments as above described, for original and permanent installation by the manufacturer. The mechanical refrigerators of tomorrow will include Indicating Thermometers as standard equipment.

UNITED STATES GAUGE CO.

44 Beaver Street

New York

BULLETIN DISCUSSES REFRIGERATION FIELD

NEW YORK CITY—"Mechanical refrigerators occupy a favorable position because of their unsaturated field, widespread appeal and the invaluable sales assistance being rendered by public utility concerns," says *Standard Trade & Securities* in an issue April 29, containing a discussion of household products.

Trade in other household products and equipment, such as electric sewing and washing machines, vacuum cleaners, floor coverings, and furniture, "remains extremely depressed, with no signs of important relief in prospect for this year," the publication states.

Continuing a discussion of the refrigeration market, *Standard Trade & Securities* offers the opinion that increased competition and price reductions may prevent producers of electric refrigerators from fully duplicating the profits of 1931.

Consumer Recognition Gained

"The mechanical refrigeration trade is now in the midst of its active sales season, and has set 1,000,000 household units (the unattained objective in 1931) as the goal for the year," the statement goes on.

"Having gained consumer recognition of the utility value and convenience of its products, the industry has developed rapidly in recent years, and still has a vast unsaturated market to exploit. In this connection it is receiving invaluable sales and advertising assistance from the powerful public utility group.

"Thus far in 1932, factory shipments of the leading manufacturers have run approximately on a par with those of a year ago. Whether this pace can be entirely maintained, however, in the face of sharply curtailed public buying power and a generally unsatisfactory business outlook, is open to question.

"Whatever the exact total may prove to be, the bulk of current evidence supports the belief that aggregate volume for the year will be relatively high.

"Competition unquestionably is becoming keener, because of the attractive possibilities in this field and because it can be logically entered by concerns engaged in radio and allied appliance lines. At present there is a considerably greater number of electric refrigerator manufacturers contending for the available business than a year ago.

Gas Machine Field

"Even the gas machine field, which heretofore was dominated by the Electrolux models of Servel, Inc., now is served by the strong General Motors organization with its line of Faraday units, supplementary to the Frigidaire electrics.

"Influenced by the competitive situation, several of the smaller producers this year introduced electric models selling as low as \$99.50, while the larger concerns revised their higher list prices downward.

"The most recent reductions, instituted by Frigidaire and met by competitors, were motivated primarily as sales stimuli at the opening of the spring season, and probably have not been entirely offset by lower costs of raw materials and labor.

"In brief, market competition is believed to be causing some contraction of profit margins in the refrigeration field. While there is yet no indication that the price situation will get out of control, it is indicated that the aggregate income of the group will fall this year to attain the record 1931 level.

"Any substantial success for several of the newer concerns is open to considerable question, but the firmly entrenched manufacturers likely will experience returns which will be only moderately below those of last year."

The statement says of ice tonnage: "Aided by increased requirements from commercial users and railway refrigerator cars, tonnage sales of ice last year attained a new high level, despite the increasing hold on the household market by mechanical refrigeration.

"Although it is probable that the long term trend of the ice business will be downward, the volume of sales over the next year, on present indications, should be relatively well maintained.

"Unseasonably warm temperatures during the past winter not only increased consumption of artificial ice, but also sharply curtailed the competing harvest of natural ice. Both of these factors are of considerable benefit to the manufacturers, from a profits standpoint, although the latter probably will not be fully realized until later in the year.

"Barring an extended period of unusually adverse weather, prospects are favorable for the leading concerns to earn about as much this year as they did in 1931."

Aggregate earnings of the household products industry in 1931, influenced more by the achievements of a few large concerns operating in unusually stable fields than by those of the numerous units operating in the "semi-luxury" lines, made a favorable showing in comparison with results of the preceding year, it is pointed out.

Total net income of the 47 companies which reported was only 15 per cent lower than in 1930, whereas general in-

dustrial profits registered a decline of 63 per cent.

These relatively favorable results, however, are not representative of majority experience, the statement continues. The 26 concerns manufacturing such miscellaneous supplies as electric washing and sewing machines, vacuum cleaners, ironers, furniture, stoves, furnaces, cooking utensils, etc., reported a decline in net income in 1931 of actually 99.6 per cent.

On the other hand, four strong concerns (Colgate-Palmolive-Peet, City Ice & Fuel, American Ice, and Diamond Match) engaged in fairly stable lines, accounted for 76 per cent of the aggregate net income of the group as a whole.

"Sales of electric sewing machines and washing machines, ironers, vacuum cleaners, furniture, cooking utensils, etc., have become increasingly restricted, reflecting reluctance or inability of the public to purchase such semi-luxury equipment during present trying times.

"Competition is especially keen in these lines, and the price cutting which in some instances has been evoked to hold business is practically eliminating margins of profit. In addition, the installment credit basis generally employed presents perplexing problems, as collections are the slowest and most difficult in many years.

39,919 SEE DISPLAY OF CLEVELAND GROUPS

CLEVELAND—The first four months of 1932 brought 39,919 visitors to the exhibit of the Electrical League of Cleveland, at their headquarters in the Builders Exchange Building, according to a report filed April 30.

This total of visitors included 27,465 individuals who wished to learn about the appliances on display; 8,885 members of lecture groups, and 3,569 members of miscellaneous groups.

Eight makes of refrigerators—Apex, Bohn, Copeland, Frigidaire, General Electric, Kelvinator, Westinghouse, and Majestic—are included in the permanent exhibit. Frigidaire and General Electric water coolers are also on display.

Other appliances on view are: floor cleaners, hand cleaners, electric clocks, corn poppers, cookers, curling irons, doughnut bakers, dryers, egg cookers, fixtures, griddles, hair dryers, room heaters, heating pads, hotbed heaters, hot plates.

Hand irons, ironers, lamps, milk warmers, mixers, juice extractors, food preparers, percolators, ranges.

Directs Home Service



MISS JACQUELINE FROST
New Gibson home economics head.

GIBSON DISTRIBUTOR BEGINS SALES DRIVE

NEW YORK CITY—The opening shot in its Gibson refrigerator campaign this spring was fired by the Morison Electrical Supply Co. at a sales meeting held in the Engineering Society Building recently.

Almost 100 of the Morison Co.'s sales force attended the meeting, which was directed by Herbert E. Young, eastern district manager for Gibson. R. J. Vogel had charge of the sales force.

Department heads of the Morison Co. include Robert P. Clarke, Robert Isakson, in charge of refrigeration sales; A. J. Erb, purchasing agent, and Mr. Morison.

Frank S. Gibson, Jr., vice president in charge of sales; F. A. Delano, general sales manager; W. R. Marshall, advertising and sales promotion manager; and Walter P. Hallstein, Jr., engineering department, were speakers at the meeting.

The Morison Co. handles territory in Westchester County and Long Island in addition to its New York City territory.

AN OUTSTANDING PROFIT OPPORTUNITY

Now . . .
a high grade, quality line of
Electric Refrigeration . . .

Backed by a nationally known—
nationally advertised name . . .
at sensationally LOW PRICES



A LINE THAT
OFFERS all the
features that the
public looks for
in a High Quality
Refrigerator.

Overpowered—fast
freezing unit

. . . . Automatically
lighted food com-
partment

8 Point cold control

. . . Heavy insulation

Stainless, seamless
porcelain interior . .

. . . . Massive doors,
rubber valve seal

Two-tone hardware

Automatic closing
door latches

Silent, vibrationless
unit no radio
interference

All the resources—all the experience of Stewart-Warner has been devoted to bringing into this field a line of merchandise that would uncover a greater market, because it offered the greatest dollar for dollar value.

Into this line has been built the quality that any product must have to bear the name of Stewart-Warner—and to justify your backing and a place on your floor.

But the quality of the merchandise alone—important though it is—does not tell the whole story of this opportunity. A line of samples on your floor means nothing to you—less to the manufacturer. Stewart-Warner, just as you, is interested only in the delivery of that merchandise to a satisfied buyer. Stewart-Warner therefore offers you the kind of selling help necessary for you to make money—necessary to produce profitable volume for the manufacturer.

If you are interested in selling electric refrigeration at a profit—regardless of whether this is a new field for you—or if you now handle a line that has "grown" to your floor—look into the Stewart-Warner Plan. See this merchandise and tie up with a name that has meant profits to thousands of keen merchants—a name that is backed by 30 million satisfied owners of its products. Write us or use the coupon.



APARTMENT MODEL
5 cu. ft. capacity



TOWN HOUSE MODEL
6.4 cu. ft. capacity



WHITE HOUSE MODEL
8 cu. ft. capacity

STEWART-WARNER

Electric Refrigeration

OVER 30,000,000 SATISFIED OWNERS OF STEWART-WARNER PRODUCTS

MAIL THIS COUPON TODAY!

ELECTRIC REFRIGERATION DIVISION
STEWART-WARNER CORPORATION ER-5
1826 Diversey Parkway, Chicago

Gentlemen: I am interested in knowing more about your Electrical Refrigeration Line, and the Plan that will help me sell it.

Name

Address

City

State

Major Problem of Industry Since 1930 Has Been That of Distribution, Col. Smith Writes

NEW YORK CITY—That industry's major problem since 1930 has been, and will continue to be, one of distribution, was the statement of Col. Frank E. Smith, president of Servel, Inc., in the leading article of the *Executives Service Bulletin* for April. Col. Smith wrote on "Successful Management Follows Through."

Col. Smith discussed such topics as budgetary and inventory control, adjusted costs of various operating factors, purchasing, research laboratory functions, sales plans, market selection, standardization and styling, and realignment of manufacturing facilities to lessen unemployment.

His article follows:

Individual Ailments

As human beings are variously constituted and suffer from a diversity of ailments, so do individual businesses manifest individual weaknesses, and the symptoms, unmistakable to the executive whose finger is on the pulse of his patient, can be relieved before they become chronic, if treated in time.

Industry in the United States, during the first 15 years of the Twentieth Century, passed through the progressive periods of research, invention, applied engineering, and single purpose production. Following the World War, and after hesitating during the dips of 1920-1921, the country started ahead on an era of standardized mass production which came to a close in the late months of 1929. The result was over-production and general inertia.

There were danger signals in the summer of 1929. They notified the business mariner of a recession in sales. The problem of inventory reduction and liquefying of current assets immediately became a major factor in the general trimming of sails.

Curtail Expenses

Management which had facilities for diagnosing conditions in the field, immediately started to set up exacting budgetary control, based on a sales expectancy more commensurate with the prospective buying power of the territories served. This move immediately curtailed expenses and brought them to new dollar totals within the prescribed percentages of a much more limited volume of business.

Inventory controls which permitted quick inventory turnover and manufacturing virtually "on order," with a minimum bank of finished product to assure prompt filling of orders, were put into force and closely scrutinized.

Distribution Is Problem

From 1930 on, the major problem has been, and will continue to be, one of distribution, while on the manufacturing and engineering side the product was being improved in appearance and performance, and costs were being curtailed in productive materials, labor and overhead expense.

In most industries where the margin of profit was relatively small, and sales prices could not be increased, very considerable savings necessarily had to be effected out of the cost of operation to balance the budget properly, if the money for buying power was to be coaxed out of the public's pockets.

The cost of various operating factors was revised downward to suit the new order, and improvements were instituted in manufacturing methods to secure greater output per man-hour and greater flexibility of production control. Material specifications were scanned closely and revised, and the substitution of

new materials at lower costs was effected, after they were shown to be satisfactory by proper engineering tests.

Various products and accessories, previously purchased from outside sources, were adapted to suit existing manufacturing facilities within the organization with a resultant gain both in profits previously paid to outside suppliers plus the general overhead which such additional manufacturing within the plant would absorb.

Intensive Development

Research laboratories were pushed to create variety of design and performance to interest the buying public, without entailing too heavy cost for tooling on the manufacturing department. Organizations were gone over with a fine-toothed comb and shifts were made in personnel and an attempt made to attract young technical graduates to accept minor positions in various departments, thus to improve the potential possibilities of the organization for the long pull.

Selling effort was concentrated in the territories having the greatest potentiality, and the expansion of national advertising and sales promotion was curtailed in favor of intensive advertising and sales promotion in the local selling areas where it was estimated the greatest buying power was available.

Selling prices were adjusted to permit proper spread of discounts to distributors and dealers which would enable them to operate on a profitable basis if their management was efficient. The aim was to solidify sales outlets and stop the heavy turnover in dealers which had been the bane of most distributing organizations.

Unemployment Situation

The unemployment condition has been ever present since 1929. Where management has had funds available for readjustment and realignment of manufacturing facilities, men have been put to work with resultant good to both employer and employee.

In periods of depression, management is hard pressed to keep an equilibrium between Standardization and Simplification on the one hand, and Variation or Styling on the other. Standardization and Simplification obviously lower the cost of production while Variation or Styling aids greatly in the extension of sales and benefits the market prices. Neither must be over-emphasized.

Management's hardest job is to supply a product to "catch" the market. This means it must be well styled. Variation from the usual accepted standards of appearance and performance must not be overlooked. It must be standardized and simplified to an extent that will permit meeting competition in the matter of price.

Human beings are likely to adapt themselves to existing conditions. Such adaptation counsels submission. And, while we view with dismay this inertia in others, we often overlook our own shortcomings. Standardization, sooner or later, spells inertia.

Standardization Leads to Inertia

Almost all people are extremely adaptable. Nevertheless, there is always a small but aggressive minority to whom change is not terrifying. If this were otherwise, civilization would be more static, and there would be less progress toward improvement.

Standardization, in time, leads to complete inertia. The cycle of industrial production is invention, variation, modification, simplification, standardization and disappearance.

The manufacturers who are emerging from the depression with decks cleared for action realize that the future holds for them only such measure of success as their research organizations are able to put into new products which their sales organization can merchandise.

Duplication of advertising and sales effort has been the chief weakness of United States industry in its efforts to effect distribution both in this country and abroad. In the future, or at least for a number of years to come, the manufacturers of the United States must be satisfied with such sales as their aggressive organizations can effect at home, and this condition will continue until tariff barriers set up against United States products by foreign countries are either reduced or eliminated.

Other things being comparable, profitable performance during the past two years and during the next five years, depends in great measure upon whether the business in question is "coming," from the potentiality and public acceptance, or whether it is "going," in the sense that the saturation point has been reached and replacement business is all that can be depended on. Automatic refrigeration is fortunate to be in the "coming" category.

Out of a population of over 120,000,000 people in the United States, there are over 20,500,000 homes wired for electricity and some 16,100,000 gas meters in use; all available for public use in the operation of either electric or gas refrigeration. Slowly but surely, the millions of dollars spent in advertising and sales promotion are bearing fruit in public acceptance.

There is a constantly increasing demand for automatic refrigeration in the home; in the delicatessen store, grocery store and market; in the business office; on the railroads in Pullman, dining, passenger and freight cars; in truck bodies for transporting frosted foods; in hotels and yachts, house boats and ocean liners; in hospitals and doctors' offices for preserving vaccines and other uses; for preserving furs and flowers, for the soda fountain and ice cream trade; for a hundred and one other uses.

Over one million automatic refrigerators for domestic use were sold during 1931, of a retail value in excess of \$250,000,000. The 10 largest manufacturers of gas and electric refrigeration gained, together, over 17 per cent in sales in 1931 over 1930 and the 1932 expectancy runs into still larger figures.

Requires Ingenuity

To entice the public's dollar out of its hiding place during the worst period of general business depression yet known, has required ingenuity of high calibre in all departments of the automatic refrigeration industry. It speaks well for the vision and resourcefulness of its engineers and production men that they created an article of great intrinsic worth, a product which offers real value to the buyer, a product styled for both eye appeal and maximum utility. And likewise great credit is reflected on the advertising and sales promotion which successfully intrigued the public mind to the point of spending over \$250,000,000 in a single year.

In golf it is the "follow through" that gains distance and direction, and the application of the same thought to general industry is bound to bring back the public's dollar into circulation and with it better times for all of us.

Water Cooler Aids Grave Diggers

PATERSON, N. J.—Casting about for new markets, F. R. Whitehead, Inc., local Frigidaire dealer, has sold an electric water cooler to the Cedar Lawn Cemetery.

Thermos bottles are filled from this water cooling equipment for the use of men digging graves in various parts of the cemetery.

Edgar Named Regional Manager of Bureau

BOSTON—Leavitt L. Edgar, vice president of the Edison Electric Illuminating Co., has been appointed regional director of the Electric Refrigeration Bureau of New England, succeeding his father, the late C. L. Edgar, according to announcement by James E. Davidson, bureau chairman.

Mr. Edgar is a graduate of Harvard University, and in 1910 was associated for a few months with General Electric Co. in connection with the construction of the Vernon Dam at Brattleboro, Vt.

LEONARD OFFICIALS SPEAK AT CINCINNATI MEETING

CINCINNATI—R. I. Petrie, sales manager of Leonard Refrigerator Co., Lee Stratton, district sales manager, and Gene Bolich of Brooke, Smith & French were speakers at the annual dealer meeting of the Marietta Chair Co., distributor in Cincinnati, held in the Netherland Plaza Hotel recently.

More than 50 dealers were present at the meeting, which was directed by William Bischoff, Sr. A movietone film conducted the audience through the Leonard factories at Detroit and Grand Rapids, Mich.

ICE-O-MATIC BRANCH NAMED DISTRIBUTOR

BLOOMINGTON, Ill.—The Chicago branch of the Williams Oil-O-Matic Heating Corp. has been named the metropolitan Chicago distributor for Ice-O-Matic electric refrigerators, according to announcement here.

Dealers will be assigned restricted territories; salesmen working under the direction of the factory branch will operate from the dealer's showroom to supplement activity of the dealer's own sales force, which will operate under his direction and supervision.

Retail salesmen will receive their training in the distributor's office; service and installation are likewise handled direct from that office.

This merchandising set-up known as the Profit Participation Program, requires that the dealer maintain on his floor three household models of the Ice-O-Matic line. Supervisors will assist him in building up a retail organization.

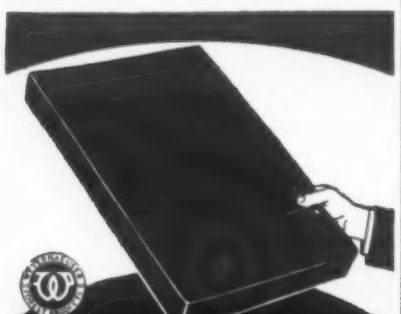
W. A. Matheson is Chicago branch manager.

20 REFRIGERATORS NAMED IN CITY SURVEY

ALLENTOWN, Pa.—Twenty different makes of electric refrigerators were named in a survey conducted by the *Allentown Morning Call*. Every seventh home was interviewed, special representatives calling at every seventh home in the city.

Out of 2,960 homes visited, 326 or 11.2 per cent were found to be equipped with mechanical refrigeration. A total of 38.3 per cent expressed preference for the General Electric refrigerator, the newspaper reported.

"A similar survey, in 1930, showed that only 4 per cent of the homes were equipped with mechanical refrigerators," the newspaper says.



Balsam-Wool
Sealed Slabs
EFFICIENT
PERMANENT
Completely satisfactory
Refrigerator Insulation

WOOD CONVERSION COMPANY
Industrial Sales Offices:
CHICAGO, 360 N. MICHIGAN AVE.
New York, 3107 Chanin Bldg.
Detroit, 515 Stephenson Bldg.
San Francisco, 149 California St.



SELL

REFRIGERATOR DRAWER VEGETABLE FRESHNER
Opens automatically as you pull it out. Self ventilating.

WATER COOLER
With fast flowing, pull-down push-up faucet. For ice-tea, lemonade or water.

FOOD SAVER No. 3
Ideal for baking, storing and extra ice-cubes. No. 1 and 2 nest on the cover of No. 3.

FOOD SAVER No. 3
COOKS COOLS STORES SAVES
FOOD REFRESHES AND PRESERVES
JUST THE THING FOR THRIFTY HOUSEWIVES

As Nationally Advertised at **8.95**
5.95
COSTS YOU ONLY
Slightly higher in far South and West

5 FEDERAL BIG

BOTH REFRIGERATORS
at right contain exactly the same amount of food. In number 1 you have disorder, inconvenience and wilting vegetables. In number 2, foods are cleanly, separately and conveniently stored in a systematic manner safe from contamination and what is more, over half the storage space is STILL AVAILABLE FOR MORE FOOD.

MORE DEALERS ENTER WILLIAMS CAMPAIGN

BLOOMINGTON, Ill.—Williams Oil-O-Matic dealers who participated in the annual spring sales campaign this year exceeded the number participating in 1931 by 10 per cent, according to an announcement by C. U. Williams, president of Williams Oil-O-Matic Heating Corp.

Salesmen enrolled in the "Spring Sales Smash" numbered 65 per cent more than in 1931.

Cash Bonus Prizes

Prizes in the campaign were cash bonuses. A broadside mailed out giving the rules and bonus schedule, was followed by a series of daily bulletins to keep interest at high peak. Four direct mail folders were furnished by the factory for use in the campaign.

"Bright and early the morning of April 1 (the start of the contest) came word from Waterloo, Iowa, that the first spring smash sale had been made at one-half second past 12 o'clock noon that morning," said Mr. Williams.

Capitalize on Depression

"Rather than ignore conditions, the present buying inertia was capitalized upon. Every sale was featured as a punch toward the ultimate knockout of Old Man Depression.

"At four o'clock the afternoon of the last day of the campaign, the sales manager of an eastern dealer offered his salesmen an additional bonus for any sales made from four o'clock until midnight.

"One salesman accounted for five burners during the eight hours; another for three, and three more salesmen tied with one burner each."

Sparks Cascades In Jackson Are Completed

JACKSON, Mich.—Flood-lighted cascades will be in operation this summer as a part of the William and Matilda Sparks Foundation, a 465-acre tract of park land which Capt. William Sparks of Sparks-Withington Co., has been developing for the City of Jackson during the last three years.

The turning on of the water and lights of the cascades, the central feature of the new park, was witnessed by city and county officials, as well as by a crowd of 25,000 people.

At a banquet attended by leading citizens, Capt. Sparks stated that he would not turn the park over to the city until he had determined the cost of maintenance, and until he had built a tower to house a combined memorial and museum.

The park includes an 18-hole golf course, a club house, canals and lagoons. The cascades are 500-ft. long, contain six falls and three pools, and are 75 ft. high.

HARRY MOLL, INC., NAMED GIBSON DISTRIBUTOR

GREENVILLE, Mich.—Harry Moll, Inc., Denver, has just been appointed distributor for Gibson electric refrigerators, according to H. G. Seldomridge, middle west district manager of the Gibson Electric Refrigerator Corp. Mr. Moll's territory will include Colorado, Wyoming, New Mexico, and 10 counties in Nebraska.

In his selling program Mr. Moll operates a motor coach in which he carries samples of his merchandise direct to his dealers.

Pakkold To Build Prospect Lists



Pakkold saleswomen will aid Gibson dealers in getting prospects.

GIBSON CO. COMPLETES PAKKOLD CONTRACT

GREENVILLE, Mich.—As part of a program to secure more prospects for electric refrigerators, the Gibson Electric Refrigerator Corp. has just completed an exclusive contract with Le-Barque Sales, Inc., to market the Pakkold beauty pack through Gibson dealers.

W. R. Marshall, Gibson sales promotion manager, explains that the accessory will be sold by young women, many of them beauty specialists, who will operate from dealers' headquarters, and who will canvass housewives in that town to sell the Pakkold.

Acquaint Women with Pakkold

No mention will be made to a housewife of the saleswoman's connection with the Gibson dealer; when a Pakkold is sold a profit will accrue to both the dealer and the saleswoman. When a home is found which lacks electric refrigeration, the saleswoman will acquaint the prospect with the features of the Pakkold, thereby building up a desire to own a refrigerator, and later make a complete report to the dealer.

Desire Already Created

Mr. Marshall expects the plan to produce a constantly growing list of live prospects for individual dealers among housewives on whom a certain amount of missionary effort has been done in creating the desire to have a refrigerator.

Pakkold saleswomen will be given a commission when one of their prospects buys a Gibson, he explains.

Among the other promotional projects directed by Mr. Marshall this spring to secure refrigerator prospects were two advertisements in *McCall's* magazine inviting people to submit coupons for premiums, and the inclusion of recipe files with prospect blanks in refrigerators sold.

Returns from Advertisement

In the February issue of *McCall's*, a Gibson advertisement invited housewives to submit a coupon which offered a combination kitchen spoon and bottle opener. On the coupon the submitter was asked to state whether or not she owned a refrigerator. These coupons were mailed to the factory, where the spoons were sent to people asking for them.

Some 25,000 replies were secured from this advertisement, Mr. Marshall reports. They were sorted, packaged, and sent to Gibson distributors, who in turn delivered them to dealers for follow-up.

Again in April a similar campaign was run in *McCall's*, this time picturing a black-on-white engraving of a sleeping baby, and offering a reproduction of the baby picture to those who returned the coupon.

The replies to this offer were sorted at the factory, and sent to dealers covering territories from which returns came. The pictures were mailed from the factory, and distributors made careful checks to see that their dealers followed up with sales calls.

As far as is possible all Gibson sales promotion activity is done direct through dealers, Mr. Marshall declares, so that it may be utilized effectively.

KELVINATOR REPORTS NET LOSS FOR MARCH QUARTER

DETROIT—Kelvinator Corp. reports a net loss of \$159,949 after interest and depreciation for the quarter ending March 31, 1932, as compared with a profit of \$352,749.07 for the same period of the preceding year.

The figure for the 1932 quarter is after providing for allowances and refunds to distributors and dealers on all field stocks on account of the price reductions of March 15.

G. W. Mason, Kelvinator president, said, "The current situation is very satisfactory. As of May 13 the company has no commercial bank loans. April unit shipments set an all time record for any month in the company's history, and May to date is showing a substantial increase over May last year. The dollar volume however will not show such an increase, owing to the price reduction."

Mr. Mason stated it was also worthy of comment that the higher priced models are receiving discriminating acceptance and are moving in greater quantities than anticipated in view of current conditions.

LEONARD DEALER SECURES 375 PROSPECTS AT SHOW

ASBURY PARK, N. J.—A back-ground which appeared like the exterior of a homey bungalow was used to form the booth of the Hines Auto & Radio Supply Co. at the recent Business Men's and Automobile Show here in April.

The firm handles Leonard electric refrigerators, and reported that 375 live prospects were discovered through the exhibit. A well-lighted corner booth housed the display of six Leonard models.

Refrigeration Boosts Michigan Business

DETROIT—Three electric refrigerator manufacturers are responsible for a business "boom" in western Michigan, and for the employment of 4,100 persons in that territory, reports the *Michigan Manufacturer and Financial Record*.

The three refrigerator firms are Gibson Refrigerator Co., Greenville, Mich.; Kelvinator Corp., Detroit and Grand Rapids; and Norge Corp., Detroit.

The Norge Corp. is employing 200 more men at Muskegon, Mich., this year than last; the Leonard plant is employing 1,280 men working two 10-hour shifts, and the Detroit Kelvinator plant uses 1,860 men. Gibson employs 1,500 on production, and 250 men in porcelain manufacture.

The three companies are providing one of the best sources of freight revenue to railroads, the statement pointed out.

SERVEL DEALERS RECEIVE NEW BOOK OF RECIPES

EVANSVILLE, Ind.—A complete new recipe book, illustrated in colors and prepared by Miss Edith Barber, president of the Home Economics Food Association and food editor of the *New York Sun*, has been made available to Servel dealers.

Pictures of Servel models in color act as end pieces for the book, which is titled "Simplified Hospitality with Servel Hermetic."

A device by which the book is thumb-indexed according to subject has been incorporated in the book. Recipes are laboratory-checked and kitchen-tested.

Subject matter is classified under the following heads: appetizers, beverages, bridge and after-theatre parties, buffet suppers, cakes, canapes, cookies, chilled and frozen desserts, dinner menus, hot breads, luncheon dishes and menus, menus for the week, pastry, quick meals, soups, sandwiches, salads, and tea menus.

LEONARD DISTRIBUTOR HOLDS 2 SALES MEETINGS

BUFFALO—Two dealer meetings, one in Buffalo and one in Rochester, N. Y., were recently held by H. B. Alderman, Inc., distributor of Leonard electric refrigerators in the two cities.

R. I. Petrie, sales manager; A. M. Taylor, director of advertising; B. T. Roe, district sales manager, all of Leonard headquarters, and Gene Bolich, representing Brooke, Smith & French, Inc., were speakers. H. B. Alderman and R. H. Davison of the distributing organization also appeared on the program.

At Buffalo, 610 dealers attended, and at Rochester, 60 dealers were present. A movietone showing the Leonard factories was shown to the assemblies.

a completely equipped refrigerator



Try it... see how much easier it is to sell a completely equipped refrigerator

As the real-estate operator built homes in order to market vacant lots—as the automobile manufacturer stepped ahead of competition by installing accessories, so today! dealers have found that the "completely furnished refrigerator" is the new profit-producing and market-making idea.

This original sales-getting set is the only one of its kind. You can use it without it costing you one cent. Simply add the cost of it to the delivered price of the refrigerator and you have a unit to offer which women will buy NOW. The small added cost is never noticed but the added value is always appreciated.

The Federal Big 5 has been tremendously successful. Every item is of the finest quality triple-coated porcelain enamel. Being designed for use as a compact, convenient unit, it saves space, food and money, greatly increases the attractiveness, convenience and efficiency of any refrigerator and brings you a new money-making opportunity.

We claim a definite increase in business for the dealer who supplies the set. Don't let your competitors beat you to it. Sit down now and fill out this coupon.

FEDERAL ENAMELING & STAMPING CO.

World's Largest Manufacturer of Enameled Kitchenware
PITTSBURGH • PENNSYLVANIA

Gentlemen: Please send me the following sets of the Federal Big 5:
..... sets, Snow White Color. sets, Pastel Green Color.

Name _____

Street _____

City _____ State _____

Distributor's Name _____

FOOD SAVER No. 2

A handy utensil for cooking, cooling or storing a variety of foods.



FOOD SAVER No. 1

Just fits a pound brick of butter. Handy for tid-bits.



NATIONAL ADVERTISING
in the *Saturday Evening Post*
and other periodicals



IDEAS AND
IMPRESSIONS

COMMENT

VIEWS AND
EXPERIENCES

By F. M. COCKRELL

A Good Idea

All of my natural sympathies are with the fellow who has a *good idea* and who is trying to *do a job*. I do not agree, however, that just because a fellow has an idea, or an ideal, which he is earnestly and sincerely trying to promote, that he is therefore entitled to a special franchise, freedom of the city, an endowment fund and a monument erected by the public.

There are a lot of things wrong with civilization and I admire the man who can analyze the errors and figure out what to do about it. I cannot agree, however, that all good people should rush to the aid of the first person who hoists a flag and proclaims himself a Moses.

I am willing to respect the man who has the courage of his convictions, provided his convictions are sound. But a bold and defiant individual with a lot of befuddled ideas is certainly less valuable and more dangerous to society than a timid man who thinks straight and does his job without asking for special favors or extra considerations.

And I am willing for those remarks to be applied, as the reader sees fit, to a manufacturer of electric refrigerators, a business paper publisher or a "membership corporation organized to provide unbiased information and counsel on goods bought by the ultimate consumer; not a business enterprise, not operated by profit."

The foregoing general statement of attitude seems to be necessary as an introduction to a few comments on the activities of Consumers' Research, Inc., which has headquarters at 28 W. 25th St., New York City.

Smoke Screen

The necessity for a preliminary statement arises from the fact that the protective "smoke screen" which has been laid around this organization appears to be designed to make it immune from the same kind of criticism which is its own stock and trade.

After reading the literature furnished by a subscriber and additional leaflets received direct from Consumers' Research, I would be inclined to approve their effort except for the holier-than-thou, touch-me-not propaganda which pervades the material.

Consumers' Research criticizes everything, right and left, frankly and furiously. I have no objections to that, including their criticism of manufacturers, advertising, electric refrigerators, ice boxes, the government, safety razors or fountain pen ink. I can criticize them all, and most people do. No special intelligence is required to criticize things the way it is usually done, and if anybody can do a particularly good job of criticising, more power to him.

Razor Blades

I note with interest that Consumers' Research condemns a certain safety razor blade. I have been using that blade for about 15 years and can vouch for the fact that a lot of them have been unsatisfactory. Having tried other makes occasionally and found them worse, I continue to use the same brand, hoping that the company will improve its product. In fact, it seems to me that the blades are better than they used to be.

It was only recently that Consumers' Research first came to my attention. A copy of their "Handbook of Buying" for March, 1932, several pages of which are devoted to ice boxes and mechanical refrigerators, was sent in by a subscriber to ELECTRIC REFRIGERATION NEWS.

My impression, after reading the data on refrigeration, is that Consumers' Research did not do very much researching to get the information. It seems to be mainly a collection of unrelated bits of competitive sales talk, with a smattering of facts, with no scientific findings and practically nothing in the way of "inside dope" on the product.

For example, the only information given about Copeland is that it uses iso-butane and similarly, the only information given about Kelvinator is that it uses sulphur dioxide. On the strength of "information from private sources" in 1928 (indicated by the symbol p. 28) both of these electric refrigerators are put in the "intermediate" class (between "recommended" and "not recommended").

Just what help such information would be to anyone in the market for an electric refrigerator is not clear to me.

No Tests Made

According to the bulletin, Consumers' Research has not made any laboratory tests of electric refrigerators. Several manufacturers were asked, over a year ago, to lend five refrigerators each for comparative tests but the manufacturers were not interested in the plan when they found that the "tests" were to be made in the homes of the employees of the organization.

It would appear that the organization scarcely knows enough about electric refrigerators to be in a position to offer any advice on the subject. Much more information, particularly as to what is wrong with all other makes of refrigerators, could be obtained from the average salesman.

The idea that the public cannot obtain negative information about a manufactured product is the bunk. Certainly it does not apply to electric refrigerators.

With the competitive situation as it is, there are all too many salesmen who know more about what is wrong with their competitors' machines than they do about the service rendered by their own make.

Smart buyers continually play on this weakness of the salesmen to get the information they want. It is an old story that if a prospect listens to enough competitive sales talk, he will not buy anything.

According to a letter dated April 28, 1932, from Eleanor S. Loeb, administrative assistant of Consumers' Research:

"We have not yet finished test of any electrical refrigerators, but are just about to begin tests of four or five makes. The choice of those makes has not yet been definitely decided upon, although it will be settled in a few days more.

"In this connection, the tests are not made in our own laboratory, which is not yet developed, but in an outside commercial testing laboratory of highest competence in this field."

When, as and if this organization gets some real information for its members it may be justified in attempting to advise on the purchase of such a product. In the meantime, we believe that the industry is entitled to know what kind of so-called information on the subject of refrigeration is being circulated.

Confidential?

In the adjoining columns we are reprinting in full all of the material under "Mechanical Refrigerators." While the bulletin is labeled "confidential," it does not appear that this admonition need be taken seriously in the light of the fact that the information is in printed form and available to anyone on payment of \$2.00.

According to a sales leaflet advertising Consumers' Research service and containing a subscription coupon, there were 33,000 subscribers on March 1, 1932. When anything is known to 33,000 people, not under oath, it is certainly out of the confidential class.

I assume that the confidential mark is a device for the legal protection of the corporation. The sales literature emphasizes the following statement:

"Consumers' Research is the only organization in the world which takes the risk of controversy with business interests involved in discussing inferior products in terms which anyone can understand and apply in the selection and purchase of goods in the retail market."

That sounds incredible to me. Manufacturers and dealers are usually just aching to tell anyone who will listen all about the inferior goods sold by their competitors.

Publishers find it necessary to make rules against naming competitors in advertising to keep advertisers from using their space to lambast each other instead of selling their own products.

Risk of Controversy

As far as "risk of controversy with business interests" is concerned, most corporations keep a flock of lawyers busy defending their interests against a continual barrage of attacks from all directions. Executives get so jumpy that they hire detectives and bodyguards and buy every kind of insurance on the market.

Elsewhere in the reprints of magazine articles attached to the letter mentioned above are references to the "antagonistic and vindictive attitude" of manufacturers. The following is an example:

"Since this organization lists the findings of its investigations of products in (Concluded on Column 1, Page 22)

HERE'S WHAT CONSUMERS' RESEARCH HAS TO SAY ABOUT MECHANICAL REFRIGERATORS

Confidential Bulletin Contains Queer Mixture of Truth, Good Advice, Nonsense and Misinformation

NOTE—The following material is reprinted from a "Handbook of Buying" issued March, 1932, by Consumers' Research, Inc., of which F. J. Schlink is president and technical director. The symbols used are explained as follows:

- A—recommended on basis of quality.
- B—intermediate with respect to quality.
- C—not recommended on basis of quality.
- cr—information from Consumers' Research's own tests or investigations.
- g—information from U. S. and state government sources like the Federal Trade Commission and the Food and Drug Administration.
- p—information from private sources which has been carefully considered or studied by Consumers' Research

Mechanical Refrigerators

Seller's tactics. Mechanical refrigerator advertising has been pretty generally misleading. In addition to gross overstatements of savings to be made by power over ice refrigeration, the offer of free service and the significance of guarantees have been grossly overplayed. (cr) It is entirely safe to ignore promises of great savings to be made by the purchase of an electric refrigerator. For example, two sales arguments before us claim respectively an average per year for a family, of \$105 and \$313 in savings over ice refrigeration, through purchase of two different makes. Such claims are utterly meaningless and compact with misrepresentation. It will perhaps be wise to place no credence in any statement or promises of a salesman who presents such selling arguments. cr 31

Comparative tabulated data used by the salesman, showing advantages, prices, various aspects of performance, etc., of competing makes, are likewise safely disregarded, since such data are normally selected and biased to sell you a particular make. cr 31

With mechanical refrigerators the claim is often made that the door can be closed on a slight push only. Such doors are apt to be not tight-fitting. See col. 35.

The consumer will be well advised to discount claims made for quick ice-freezing properties in a mechanical refrigerator, since rapid freezing is inconsistent with economy of operation. In any normal case it will be decidedly cheaper to buy extra ice than to rely upon the mechanical refrigerator for any except a minimum quantity of ice cubes, since the better insulated the box is—and hence the more economical in the use of electricity or gas—the more infrequent the running of the motor or the energizing otherwise of the refrigeration cycle, which may result in a long period (10 or 15 hours) passing without any excess refrigeration effect, the excess (necessarily wasteful of electricity or gas) being required to produce ice cubes. Temperature controls, when effective, however, allow the consumer to increase freezing capacity to suit needs, along with increase in cost of operation. (pt 31) At least be sure you are not buying a mechanical refrigerator primarily because you like the nice little ice cubes or look forward to an endless procession of frozen desserts.

General cautions in selection. There are at present about forty manufacturers of electrical refrigerators, with new firms continually appearing and others disappearing from the market. (So far there appears to be only one important manufacturer of a gas refrigerator but a new one is offered as this is going through the press.) Caution should be exercised in the buying of any gas or electric refrigerator recently put on the market. It may not yet have achieved national distribution (so that servicing arrangements may be or will become difficult in your locality), and it may not have been on the market long enough to have established its freedom from minor manufacturing difficulties such as invariably appear in any new, complex mechanism of this type. On these and other points much will depend on your judgment of the probability of your local agent's carrying out promises as to servicing. pt 30

In purchasing a refrigerator from a firm whose technical competence in this field is not known—and there will occasionally be cases where on account of an especially attractive price subscribers will wish to do this—first assure yourself, by written guarantee, of obtaining proper and continuous servicing over the full period for which you expect to use the machine—bearing in mind that in this industry failure of the manufacturer to remain in business may make the obtaining of replacement parts absolutely impossible; and second, that you get a written guarantee, signed by a responsible officer of the selling corporation, allowing you a trial period of at least six months on at least as liberal a basis as the following: *The purchaser shall be the sole judge of whether performance is satisfactory, with the proviso that, if he rejects the product, he shall furnish a statement of his reasons for so doing, said statement to be attested by affidavit if required; in which case there shall be a complete release from future liability for payments; and from the total payments so far made, there may be deducted, in calculating the refund to be made by the seller, a sum equivalent to a rental of (say), \$4 per month of actual use or serviceability of the appliance. If buying from a mail-order house, be sure that the regular guarantee form applying to its sales in general, applies, without special provisions less favorable to the customer.*

Regarding the weight to be given to judgments of individuals on performance and servicing requirements of mechanical refrigerators, it is to be noted that single or isolated cases are of small practical significance. On account of manufacturing and service variations, individual examples of good performance or service may not represent even as a crude approximation, the probable or actual performance of the product as a whole. cr 31

A refrigerator which seems very quiet in a salesroom on a city street may make a noise in the quiet hours of the night so disturbing as to prevent sleep when used in a one- or two-room apartment where the distance between the refrigerator and the sleeping room is small and walls are not "sound-proof." cr 31

The placing of an electrical unit in a used ice refrigerator is of dubious wisdom. An ice refrigerator for such purpose should not be of lower grade than the best listed in the foregoing section. It should have at least a 2-in. wall thickness of an insulating material fully equivalent to corkboard; few such materials exist. cr 31

Gas hazards. Before buying a power-operated refrigerator inquire about the refrigerant and have the information in responsible written form in a circular or letter from the maker or his authorized agent. The information should include a statement of the warning agents (added stencils or "alarm" gases) used, if any. "Methyl chloride and methyl bromide and probably also ethyl bromide and ethyl chloride do not possess sufficient warning properties to prevent serious accidents." g 29

The practice of manufacturers in the past has been to obtain information on poisoning by refrigerant gases through death and illness of customers. Government reports regarding supposed non-poisonous qualities of refrigerant gases may be discounted in view of past misleading performance of Bureau of Mines in this connection. (The Nation, "Govern-

and accepted as worthy of notice by consumers interested in the subject discussed.

pt—confidential information from expert technicians or scientists.

pts—based upon unpublished experimentation, equivalent to ex as used in previous handbooks.

u—unlisted. The source is a book or published document, reference to which is omitted on account of space limitations, usually because the item is not controversial or because it is generally known among technicians skilled in the field.

31, 32—years in which the information was published or obtained by the staff of Consumers' Research. Thus "pt 31" would mean "obtained in 1931 from private expert technical sources."

ment Bureaus for Private Profit," Nov. 11, 1931; reprints available from CR at 10c each.) Such government reports are sometimes used or cited in sales arguments.

All refrigerant gases in common use are poisonous. The two most common are sulphur dioxide and methyl chloride; others are ammonia, carbon dioxide, and ethyl chloride. Regarding the first two: Sulphur dioxide is pungent and suffocating in effect, irritant to the lungs and bronchial tubes, where it is converted into sulphurous acid. It deteriorates fabrics and is corrosive to metals in the presence of moisture. Methyl chloride is colorless, with a faintly sweetish odor which cannot be recognized in small concentrations; has no superficial irritating properties, but is absorbed in the blood and decomposed into methyl (wood) alcohol, a dangerous poison similar to but more poisonous than ether. When inhaled in small quantities over long periods, it causes degenerative changes in the brain, kidneys, heart, lungs, and stomach which may result in death; such changes are sometimes of such a nature as to be mistaken for food or drug poisoning or other obscure difficulty. It may be absorbed in foods or by ice cubes. Methyl chloride is not corrosive to iron, steel, copper or nickel.

A new refrigerant is expected to be offered shortly by electric refrigerator manufacturers for which large claims will be made of freedom from poisonous qualities. Such poisonous quality in the case we have in mind is, however, not lacking if the gas comes in contact with a flame (see October, 1930, Handbook, p. 11). Hydrofluoric acid, an extremely corrosive substance, may be generated from one of these new gases which, when not in contact with a flame, e.g., of a gas stove, may be entirely harmless.

Leaks in refrigerant systems are extremely common and care should be exercised in the case of all refrigerant gases, the commonest leaking gas being sulphur dioxide, and next to that, methyl chloride. Leaks are more frequent in multiple systems, where a number of food storage cabinets are cooled from a single central motor and compressor system, than in isolated units which are self-contained as to motor, compressor, and cooling chamber. pts 31

In most cities no effective regulation of these dangerous conditions exists. An important public service can be done in any community by anyone interested in bringing about proper regulation of these hazards, by appeal to city officials, etc. The Chicago Department of Health, which in 1930 reported 10 deaths and 29 non-fatal poisoning cases from multiple systems, can furnish valuable information for persons interested in bringing about control of power refrigerators by their local authorities.

Amateurs (or plumbers) should not attempt to correct any leaks which may occur in refrigerators, nor should anyone use a sharp instrument to remove frost from coils, or use force in removing trays from the tray space, either of which acts may bring about the development of a dangerous leak. cr 31

In Frigidaire, Kelvinator, and some other electric refrigerators, refrigerant gases are retained in the system by "stuffing boxes." If this type of mechanism is left idle for a long period, there is some likelihood that gases may escape, with some possible action on house furnishings (fading of textiles, corrosion of metals). This fact should be considered in selecting a make for purchase. Manufacturers will service the box against this difficulty by pumping refrigerant into one side of the system, locking it there by valves. Subsequent pumping back into the system will bring the total service cost to perhaps \$2. pt 31

Shock hazard. A scientist subscriber reports a serious shock hazard in the case of a well-known make of electric refrigerator, which, when reported to the manufacturers, resulted merely in their expressing interest in the information and regret for the incident. The shock hazard involves the following points which can be checked by allowing an engineer friend to inspect your own refrigerator. (An idea of the possible seriousness of this difficulty in electrical appliances can be seen in CR General Bulletin No. 1, Sept., 1931, p. 7):

Insulation worn off an extension cord in refrigerator by contact with the drive wheel of the compressor resulted in contact being made between one of the wires of the cord and the frame of the refrigerator. A person thereafter touching the box while at the same time removing a utensil from the stove was seriously shocked, and burned by spilling of the hot contents of the utensil. This defect was not a mere manufacturing error but one of faulty design. In case the victim's hands had been wet, the accident might easily have been fatal.

We shall be grateful for information from subscribers about difficulties of this type, and when more complete information is received will apply the comment specifically to the make or makes involved.

Fire hazard. Electric refrigerators involve a special hazard in that the motor, if it stall, may overheat sufficiently to set fire to the house. Motors not under personal supervision at all times, and lacking automatic control switches to prevent continuous overload, always involve fire risk. u 31

There is also a newspaper report of suit against the manufacturers of Electrolux Gas Refrigerator where a death resulted from a fire following an explosion. u 31

Other hazards. Cases have been reported where cross connections have been found between water supply and sewerage systems in houses and office buildings (a connection in which under peculiar conditions a reverse flow can occur); and in consequence, the drinking water supply was contaminated by sewage. One prolific source of such dangerous cross connections has been the connection of cooling water outlet of electric and gas refrigerators by tapping the copper tube connection into the coil or waste pipe with a tap plug. These refrigerators are not usually installed by a plumber and are rarely reported for official plumbing inspection. An interruption of water supply pressure in this and similar cases results in a flow of sewage back into the fresh water piping. u 29

Cost of operation. Following are data for estimating the cost of operation of electrical refrigerators derived from a study of a rural test line in South Dakota:

(Concluded on Column 1, Page 22)

SWITZERLAND RAISES REFRIGERATION DUTY

By Werner Schoop
H. M. Robins Co. Representative

ZURICH, Switzerland—An increase in the import duty on condensing units and complete self-contained refrigerators from 35 Swiss francs per 100 kilos to 200 Swiss francs per 100 kilos, has been announced by the Swiss government.

The increased duty was designed to protect Swiss refrigeration manufacturers, and was imposed with but two days' warning. Importers and distributors of American-made refrigerators are taking steps to have the import duty brought back to an amount which will take into account the fact that only 27 per cent of the sales price of any refrigeration installation is remitted to the exporter.

This figure, from one of the largest importers, shows that the rest of the income goes for labor, installation, and material obtained locally, as well as for sales expense. Swiss manufacturers, they will point out, are not yet equipped to supply the needs of this market.

Only One Compressor

Several of the Swiss makes are only produced in part in this country, and in one instance, it is only the compressor which is produced here, the cabinet coming from Germany, the electrical controls, motor, and evaporator from America.

Swiss makes on the market include the following: Frimax, made by Max Thum, Geneva, a condensing unit of commercial size, operating on SO₂. Also made by this firm is a line of household models, of which the cabinet is made locally, the unit being the Cavalier Electric.

Silba: made by Silba A. G., of Basle; household cabinets only; works on the absorption principle; fully automatic; prices quite low.

Frigorex: made by Frigorex A. G., formerly Gebrüder Bayer, of Lucerne. This is a full line of household and commercial models which formerly bought its units in America, and is now manufacturing locally. Until now, cabinet and controls were imported. The system operates on methyl chloride with a warning agent.

Frigomatic: made by the combine Escher Wyss, Zurich; Brown Boveri, Baden, and the former Kelvinator distributor. This combine has just recently gone into production, offering a line of commercial models and a cabinet, but concentrating on commercial business. The refrigerant is SO₂; electric controls are made in the United States, the motor in Switzerland.

It should be noted that the first two companies in this combine, while interested in the production of Frigomatic, are still manufacturing their own lines individually. These lines are Autofrigor and "A-S."

Autofrigor

Autofrigor: made by Escher Wyss, Zurich, is an entirely self-enclosed, hermetic system, operating on SO₂. The firm concentrates on commercial business.

A-S (Audiffren Singrun): made by a daughter company of Brown Boveri. The unit is self-enclosed and hermetic, and only commercial models are made, all requiring water cooling.

Sulzer A. G., Winterthur, manufacturer of large refrigerating plants, also makes a line of smaller units with rotative compressors.

A non-mechanical refrigerator operating with solidified CO₂ is the Carbofrigor, made by Carba A. G., Zurich. The cabinet has a top of glass coated with silver nitrate, in principle similar to a thermos bottle. In this the block of dry ice is placed.

* The cabinet is rented on a basis of from Sw. fr. 11 per month, including 15 blocks of dry ice, to Sw. fr. 15.50, including 30 blocks of dry ice (blocks per year). A block lasts from 8 to 12 days.

Miss France Makes a Visit



"Miss France" was a guest at the Frigidaire booth in the recent Arts Menagers exposition in Paris. She was presented a bouquet by Frigidaire officials.

WESTINGHOUSE CO. SHOWS DROP IN GROSS EARNINGS

EAST PITTSBURGH, Pa.—Quarterly statements showing the financial condition of the Westinghouse Elec. & Mfg. Co. and proprietary manufacturing companies released April 30 show a drop of 28 per cent in gross earnings as compared with a similar period in 1931.

Although the earnings are lower, the net loss over the period is only 46 per cent as great as the loss in the first quarter of 1931.

Improvement is noted in the amount of unfilled orders, which totalled \$36,598,246 March 31, 1931, and \$37,999,565 March 31, 1932. Net inventory has been cut from \$43,299,442 March 31, 1931, to \$37,511,827 March 31, 1932.

Orders entered during the first quarter of 1931 were \$30,100,410, and for the first quarter of this year, \$20,388,658.

Net loss of the combined companies in the first quarter of 1932 was \$1,320,148, or \$1,565,797 less than the loss for the same months of 1931, despite the fact that net sales billed or gross earnings dropped from \$28,476,175 to \$20,377,948.

Dividend checks were received April 30 by 54,158 preferred and common stockholders. One year ago this figure was \$49,332, and two years ago it was 43,528. Of the current total, 14,628 stockholders are in New York state; 11,484 in Pennsylvania; 7,152 in Massachusetts, and 928 in foreign countries.

14,000 ATTEND STATEN ISLAND BUREAU SHOW

STATEN ISLAND, N. Y.—Fourteen thousand people from all sections of Staten Island attended the second annual electric refrigeration show given by the Electric Refrigeration Bureau of Staten Island recently.

Eight dealers exhibited a total of 40 units. Sales to the amount of \$4,200 were made on the floor and the dealers participating report hundreds of actively interested prospects added to their lists. More than 1,700 names and addresses of prospective purchasers were obtained.

Products represented at the show were General Electric, Frigidaire, Kelvinator, Westinghouse, Copeland, Spar-ton, Majestic and Leonard.

FRIGIDAIRE GETS COUNTY HOSPITAL CONTRACT

OMAHA—An order for 15 household refrigerator models to be installed in the diet kitchen of the new County Hospital has been awarded to Frigidaire Corp. The 6-cu. ft. size is desired.

TEXAS DEALER NAMED

SAN ANTONIO, Tex.—The Martin Wright Electrical Co., here, has been appointed Norge dealer, according to an announcement received from Ellis Chaney, vice president of Southern Equipment Co., Norge distributor.

NORGE DISTRIBUTOR ISSUES SALES BOOK

PHILADELPHIA—The origin, development, principle and features of the Norge "rollator" compressor are discussed by David M. Trilling, in the second issue this year of "Hot after Cold Business," a booklet published by Trilling & Montague, Philadelphia Norge distributor.

"Hot after Cold Business" is a series of booklets containing discussions and pointers designed to aid the dealer and his sales forces. The booklets "are of small pocket size so that they may be conveniently carried and read at leisure moments."

Explains Rollator

In this particular booklet, the story begins with the development of the "rollator" in St. Louis in 1924. A discussion follows of the rotary principle and of the Norge compressor's predecessors in the use of that principle.

An explanation of the "rollator" in the simplest terms, illustrated by drawings, follows. A blade, a roller, and a shaft make the "rollator," the reader is told.

The marathon "rollator," which has been running continually for six years at Norge Corp. headquarters, and which is taken apart to determine possible wear once a year, is described.

Final section of the booklet is devoted to the comparative volumetric efficiencies of various types of refrigeration compressors.

NORGE DEALER APPOINTED IN ST. LOUIS

SPRINGFIELD, Ill.—The Music Shop, 414 E. Monroe St., has added Norge refrigeration to its line, reports H. H. Walker of Norge Co. of Missouri, St. Louis, Norge distributor.

WHY WORRY?...we'll settle that...and how!



● No one wants a 25% tariff on ice cubes. Yet that's what it amounts to when you consider the loss in melting cubes out of old style trays into the sink... loss in washing the cubes... loss of time... loss of temper.

But we've settled it when you buy a new freezer... that it has this modern cube tray. Or, you can modernize your present refrigerator by getting rubber trays to fit it. And the price? As low as \$1.50 each!

Just see the dealer who sells your make of refrigerator or write to us direct, telling us the name of your refrigerator, and the number of cubes your ice trays hold.

THE INLAND MANUFACTURING COMPANY
Dept. E-5, Dayton, Ohio

Flexo-Tray
ICE CUBES—THE MODERN WAY

Who is selling your customers

FLEXIBLE RUBBER FREEZING TRAYS?

It's a fact that the use of flexible rubber trays for freezing ice cubes is sweeping the country. More than a million owners of automatic refrigerators already use this modern tray. And the number is increasing by the thousands every day.

This tremendous volume of business is going to dealers who sense the wants of the public. Some of these dealers may be right in your own territory... selling to your own customers... getting business you might as well have.

A Two-Fold Profit Opportunity

And now we are offering you the opportunity to get this business... a two-fold opportunity, in fact, with almost no selling effort. First, it's an opportunity to sell flexible rubber freezing trays to present users of the refrigerator you handle; and, second, an opportunity to sell more of these sensible, convenient and popular trays to new refrigerator customers.

Not only that. This modern tray gives you and your salesmen a sound and logical reason for making "call-backs" on owners. And dealers have told us that in scores of cases flexible rubber trays have directly influenced the sale of new refrigerators and developed prospects. You can't afford to overlook such a powerful sales help.

And National Advertising, too

We are doing our part to tell your customers why they should use the flexible rubber freezing tray... how it will modernize their refrigerator as nothing else can do. Leading magazines are taking Flexo-Tray advertisements, like the one reproduced on this page, into more than 7 million homes. These advertisements are still further stimulating the demand for flexible rubber trays... creating a new market for you to supply.

Why not get your share of this business? Write to the manufacturer of the refrigerator you sell or to us direct for details.

THE INLAND MANUFACTURING CO., Dayton, Ohio

Flexo-Tray
Reg. U. S. Pat. Off. Pat. & Pats. Pend.

ICE CUBES—THE MODERN WAY

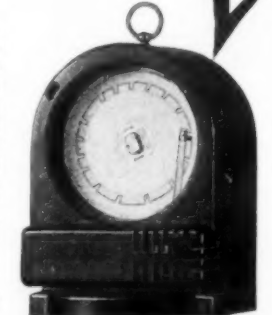
Practical OPERATION RECORDER

Check the following exclusive features found in Practical Recording Instruments.

Records the on and off periods of any 110-220 volt A.C. or D.C. motors of 1/2 H.P. or less

1. Non-breakable face.
2. All metal parts nickel plated and rust proof.
3. Hinges are integral parts of case, no screws to get loose.
4. No loose parts, no chained parts.
5. Non-clogging pen of nickel silver, easy to fill and clean and never in the way.
6. A 36 hour New Haven clock movement, protected from condensation, wound, set, regulated from the rear without opening case or disturbing chart.
7. Compact case of Bakelite 5 1/2" wide, 4 1/2" deep, and 7 1/2" high, with space provided for ink bottle and 25 charts. Charts are 4" with lines clearly spaced, divided into 24 hours with each hour subdivided into ten minute spaces.
8. Leads of ample length are furnished with connections.
9. For safe and convenient carrying the Practical Operation Recorder is fitted in a strong fibre case with handle and latch.
10. A one year guarantee goes with each instrument.

Unusual discount to refrigeration dealers and manufacturers



The Practical Instrument Co. 2713 North Ashland Ave. Chicago

COMMENT

(Concluded from Page 20)

two categories, those recommended and those not recommended, it goes without saying that the manufacturer whose product fails to meet specifications protests with energy and indignation. His methods of dealing with the scientific findings of tests which reveal deficiencies in his product are quite in line with his already demonstrated inability to face disagreeable facts about the operation of our God-given industrial system. He either blusters, storms and threatens to bring suit or he sends a suave emissary to 'fix things up.' With only the rarest exceptions he has never submitted technical information of an unbiased, reputable sort to correct or modify the original findings. He has, with few exceptions, been concerned not with the fact that his product is substandard, harmful, or poorly made, but rather with the fact that the results of the analysis and tests issued to 24,000 subscribers will injure his sales."

It seems to me that Consumers' Research must answer to the charge of being guilty of the very crimes of which it accuses others. If the information on mechanical refrigerators is a good sample, then their product is itself very INFERIOR.

Not for Profit?

The statement that Consumers' Research is "not a business enterprise, not operated for profit" is refuted by the fact that the information is not freely made public, that a charge is made for the service and that the subscriber is forbidden to give the information to anyone outside of his immediate household, even to relatives or friends who are visiting the subscriber's household temporarily.

The sales literature of the organization is given to the same sort of bragging and misrepresentation which it decries when coming from manufacturers and advertisers. According to the bulletin the information furnished comes "from impartial technical experts." Very little technical expertise is revealed by the refrigeration report.

It looks to me like a case of "the blind leading the blind."

In my opinion the BEST statement in the bulletin is one below, which reads:

"The relatively small differences in the price between the best and the worst make it possible for the purchaser to choose solely on merit with due regard for availability of local servicing."

Consumers Research Tries to Advise Buyers

(Concluded from Page 20)

Average yearly consumption (current turned off in three of the four boxes during winter)..... 379 kwh
Average monthly consumption—three hottest months... 77 kwh
Average monthly consumption—five winter months... 44 kwh
Average food chamber temperature..... 42.5° F.
Average monthly consumption on farms in other states: N. H., 34 kwh; Minn., 36; Iowa, 45; Ala., 50; Nebr., 67; Kan., 68; average, 11 states, 46.

For economy, the proper ventilation or cooling of condenser unit (warmest part of the system) is necessary. Under worst conditions, with removable shield in front in place and refrigerator close against the wall, monthly operating cost (in another study) amounted to nearly twice the cost with shield removed and refrigerator well away from wall.

If possible, guaranteed maximum electric current or gas consumption should be written into the purchase order and included in a responsibly signed sales slip or invoice. For purpose of rough checking of such guarantees, current and previous year's gas or electricity consumption should be used, provided that no other electric or gas consuming appliance has been added or taken out of service.

The motors used to drive mechanical refrigerators do not generally have the desirable high efficiency. A reasonable increase of efficiency would save the average user over 170 kwh a year (\$8-\$15). This saving would warrant an additional payment of \$100 to \$200 for the motor alone, with a good return on investment—a nice illustration of the serious loss to the consumer through the ordinary processes of skimping by manufacturers. Note that the 20% increase in efficiency which is easily possible, is equivalent to a 25% cut in electric rates on the amount of electricity used by the refrigerator. u 26+pt 31

Electrolux (Servel - Electrolux Corp., Evansville, Ind.) The mechanical refrigerator using gas as an energy source (but adapted for use of electricity in regions having a very low electricity cost), probably the best power refrigerator. Requires assured water supply of temperature not over 85° F. and, normally, manufactured, natural, or bottled gas as fuel. Burner and adjustment must be adapted to the type of gas burned. Its operating cost will, it is believed, be considerably less than that of the electrically driven machines. (pt 30) In New York City, where illuminating gas of 540 Btu costs \$1.15 per thousand feet, the annual gas cost for Electrolux is about \$1.70 per month for 7 cu. ft. box maintained at 40°-43° F. (p 30) Cooling water consumption for gas refrigerators is about 245 cu. ft. per month, representing an extreme range of 2 to 7 gal. an hour. (p 30) These refrigerators require uniform gas pressure and water supply of a type which has no tendency to clog pipes. The agent will give guaranteed operating cost figures which will not be at all difficult to verify in actual use. At high cooling water temperatures this refrigerator ceases to function or functions wastefully. Possible shortage of water in certain regions during the hottest weather needs consideration in connection with this type. In some cases where water is sold at a flat rate the use of the gas refrigerator may take the consumption out of the flat rate class and add appreciably to the annual water cost. It has been reported that care needs to be taken in lighting the burner of the Electrolux in order that the flame shall not flare back into the air port instead of burning at the proper orifice—a condition which in all gas burners gives rise to serious danger of producing carbon monoxide. This refrigerator uses the relatively safe gas, ammonia, as a refrigerant. Cost of disconnection and reinstallation when one is moving, varies—\$15 in one district. The increase of price for successively larger sizes of this make is reported to be far less than for important makes of electric refrigerators; it may therefore be an exceptionally economical purchase for those re-

quiring a larger food storage space than most commonly used. cr 31

G. E. (General Electric Co., Cleveland, Ohio) believed to be the best make of refrigerating machine with electric motor. (pt 30) Uses sulphur dioxide. This refrigerator contains a 15-watt heating coil to prevent congealing of the oil, using current continuously and accounting for a considerable cost of energy per month. General Electric dealers, we understand, apply a \$25 service charge after the guarantee period has expired, which means that even small repairs call for replacement of the entire unit, which is returned to a repair station. While this is an economical method for major parts, it appears to penalize the user on minor points that might have been adjusted in 10 minutes. In the case of the non-sealed or open-construction unit, A General Electric circular indicates that the only problem in moving is to pull out the wall plug, but for moving any considerable distance the manufacturer recommends the removal of the motor top from the box and the placing of it in a special crate requiring use of hoisting apparatus. The weight of the G. E. assembled is very great and to move it requires the services of at least three men or possibly four. In one district the company charges \$10 for dismounting and \$10 for reassembling; these charges not covering the actual moving. cr 31

Frigidaire (Frigidaire Corp., Dayton, Ohio). Information about this is most conflicting, suggesting both of a certain variability in quality of production and of rather frequent changes in design details. Has been reported to require servicing large in amount and in some cases costly in nature, though perhaps much less troublesome in latest models. Leaks of its refrigerant, sulphur dioxide, are also reported. It is recognized that the number of unfavorable comments on this make may in part merely reflect its large distribution. On the whole it is regarded by CR as one of the best makes, probably not to be estimated so favorably as G. E. and Electrolux. cr 31

Servel Electric (Servel, Inc., Evansville, Ind.) p 28.

It is understood that General Motors will shortly add a line, **Moraine**, \$30-40 lower in price than **Frigidaire** and reported to be substantially identical with it except for finish. A General Motors subsidiary (Faraday Corp.) will also sell a new line of gas-operated refrigerators, the first important competitor of **Electrolux**.

Westinghouse (Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.) Uses sulphur dioxide. In general follows design of G. E. We think, from unconfirmed opinion of qualified persons, that it may be well to regard **Westinghouse** as still in the experimental stage. CR will at-

tempt to develop more definitive information. pt 31, 32

Copeland (Copeland Products, Inc., Mount Clemens, Mich.) Uses iso-butane. p 28

Kelvinator (Kelvinator Corp., Detroit, Mich.) Uses sulphur dioxide. p 28

Perfection Stove Co. (7609 Platt Ave., Cleveland, Ohio), sells an oil-burning refrigerator, but we have no information about its merits. **Montgomery Ward & Co.**, is marketing an electric refrigerator called **TruKold**, about which we have no information.

We likewise have no information about **Coldspot** (sold by Sears, Roebuck & Co.) and the **Norge** electrical refrigerators. CR will accept and file responsible, disinterested, and factual comments received from subscribers as to the performance of these refrigerators over a reasonable period of service.

As a matter of opinion, it appears to CR that, when necessary for reasons of economy to purchase a refrigerator of which the design, economy, and servicing are somewhat dubious, a mail order house refrigerator (Montgomery Ward or Sears, Roebuck), in view of its guarantee (but see col. 41), may be the least hazardous purchase considering its price advantage and the probability of some care in selection and test by the vendor.

Miscellaneous Refrigerating Devices and Accessories

Crosley Ice Ball (Crosley Radio Corp., 1329 Arlington, Cincinnati, Ohio). Might be suitable for some extreme conditions where ice or gas or electric mechanical refrigerators cannot be used. Works by heating on the stove one of the two connected balls while the other is submerged in a tub of water. Upon then cooling the hot ball in cold water for a few minutes the device is ready to act as a cooling unit when placed in ice box.

Mira-Cold Refrigerator Nos. 23 H M 21404; 23 H M 21554 (Sears, Roebuck & Co., Chicago). \$77.50; double unit, for larger families, \$117.50. Box similar to ice chest with one or two units operating on same principle as **Crosley Ice Ball**.

On the following device information now some years old indicates unsatisfactory performance:

Thermomar Iceless Refrigerator (Atmospheric Refrigeration Co., New York City). An iceless refrigerator working on the principle of cooling by evaporation of water from a porous bowl. It provides in average use a temperature drop of only about 7° below outside temperature. pts 26

On the following window boxes information now some years old indicates unsatisfactory performance:

Iceless Gledwin Cooler (Iceless Icebox Co., Chicago) pts 26

Wallingford (Cold-Air Window Refrigerating Co., Philadelphia) pts 26

A well-known refrigerator deodorant device which consists of 1/3 charcoal and 2/3 plaster of Paris cannot, we believe, give the performance claimed for it. Experiment made with a slice of onion near a piece of butter and the deodorant device between made the butter a total loss. pts

Many mechanical refrigerators produced are in an experimental state, are poorly designed, have never been subjected to careful study or experimentation by their makers, require an excessive amount of servicing, and have not evolved even to a sufficiently stable design and performance to make detailed test results, if available, hold good for a reasonable period. CR suggests therefore that for the present and on the average one will not be grossly misled by following the classified recommendations above. The relatively small differences in price between the best and the worst make it possible for the purchaser to choose solely on merit with due regard for availability of local servicing.

In each case the refrigerants indicated are for regular models (not the type having the motor and compressor at a point distant from the food chamber).

Tests planned by CR. CR had expected by this time to be able to report to its subscribers, in detail, on at least five of the makes of electric refrigerators entering into major use. The following makers were asked (February, March, 1931) to lend refrigerators for use in such tests when the definite understanding that there was to be no expense to them whatever, direct or indirect, other than the supplying of refrigerators for test, subsequently to be returned. **Westinghouse**, **Coldspot** (Sears, Roebuck & Co.), **Servel**, **Kelvinator**, **Frigidaire**, **General Electric**, **Copeland**. Five refrigerators of each make for use in such test were to be selected by a representative of the testing laboratory at random from warehouse stock. Each manufacturer was to receive, without charge, complete test findings applying to his own product, and CR was to bear the entire expense of the laboratory work, which if 30 machines were tested, would amount to \$650. The tests, if and when made, will be of such type as to evaluate the efficiency as to interior temperatures, electricity used, convenience, general engineering design, and degree of freedom from, and expense of servicing that may be required. The replies CR received are here briefly indicated.

Westinghouse: definitely refused.

Servel: possibly willing to cooperate at a later time.

Kelvinator: referred CR to the trade association of the industry.

General Electric: definitely refused, on the basis of the great number of G. E. refrigerators in service and the fact that "rather complete laboratory information is available." Request from CR (Jan. 13, 1932) that complete available laboratory data based on tests outside the G. E. company's control be made available to CR, has been acknowledged but not replied to (Feb. 8, 1932).

Copeland: referred CR to the trade association of the industry.

Four companies have, however, agreed quite recently to furnish machines and we are now able to report that tests will be begun this month on the following four makes:

Frigidaire, who after a year of correspondence, have agreed to lend us the five requested samples.

Sears, Roebuck & Co.

Servel-Electrolux (the gas refrigerator).

Montgomery Ward & Co.

It should be noted that the only request made of any company was for the loan of sample refrigerators duly certified to be from regular stock. No other expense of any kind to the companies would be involved.

Dubious Advice

Likewise, in my opinion, the poorest statement is as follows:

"As a matter of opinion, it appears to CR (Consumers' Research) that, when necessary for reasons of economy to purchase a refrigerator of which the design, economy and servicing are somewhat dubious, a mail order house refrigerator (Montgomery Ward or Sears, Roebuck), in view of its guarantee (but see column 41) may be the least hazardous purchase considering its price advantage and the probability of some care in selection and test by the vendor."

In other words, if you want to buy something dubious, get it from a mail order house. That certainly is a "dubious" compliment to the mail order houses.

It reminds me of that old motto, occasionally displayed by small town merchants with a sense of humor: "Don't go elsewhere to get cheated, come to us."

If we adopted the Consumer's Research method, I fear that we would have to place it in the "not recommended" class. But, it is possible that they may improve their product, just as manufacturers do with experience. In any event, we will endeavor to keep readers informed regarding developments. So far, it looks like a good idea gone wrong.

Knows the Orient



B. H. MILES
Williams Ice-O-Matic engineer is something of an authority on the Sino-Japanese situation.

HOTEL MAYFLOWER BUYS MAYFLOWER EQUIPMENT

WASHINGTON, D. C.—Mayflower refrigeration equipment has been installed in the Hotel Mayflower, Washington home of many well-known statesmen, by the F. P. May Hardware Co. Equipment installed included a 10-compartment ice cream cooler, electric water coolers, and kitchen and serving room equipment.

Among the famous people who live at the Hotel Mayflower are: Charles F. Curtis, vice president of the United States; Ray Lyman Wilbur, secretary of the interior; A. M. Hyde, secretary of agriculture; E. L. Jahncke, assistant secretary of the navy; Frederick H. Payne, assistant secretary of war.

Senator J. Hamilton Lewis of Illinois; Senator Joseph W. Bailey, North Carolina; Senator Charles L. McNary of Oregon; Nellie T. Ross, ex-governor of Wyoming; Count Marchetti, counselor of the Italian Embassy; Emilio Bello, ex-president of Chile.

FRIGIDAIRE LAPEL BUTTON USED IN CLOSING SALES

DAYTON—A small lapel button used in connection with a Frigidaire campaign, the purpose of which was to lend interest and competitive spirit to local sales activities, has been converted into a sales closing point. J. J. Nance, sales promotion manager, states.

The lapel button reads "A Month for a Man." Every household Frigidaire sold, factory records show, represents a sufficient amount of labor to provide one workman with steady employment for an entire month. Whenever a Frigidaire salesman sells 12 household models, therefore, he has created employment for one man for an entire year.

A "Month for a Man" campaign was recently held for the field organization as a result of this premise, and showed such good results, according to Mr. Nance, that it is being continued on a "Year for a Man" basis.

MAJESTIC BROADSIDES ON PRODUCTS ARE RELEASED

CHICAGO—Two broadsides, one to be used by refrigerator dealers, the other for radio outlets, have been issued by Grigsby-Grunow Co.

The two sales promotion helps, in the form of tabloid newspapers, are called **Polar News** and **Radio Herald**. Stories of Majestic production, features of the two lines, and, in the case of the refrigerator paper, a few recipes for frozen dishes, appear on the front pages of the two papers.

Inside pages in both cases are given over to pictures of models, with specifications and prices. Back pages show display advertisements, with space at the bottom for the dealer's name.

GENERAL EQUIPMENT CORP. TO SELL L. & H. RANGES

BOSTON—General Equipment Corp., 584 Commonwealth Ave., has been appointed distributor for L & H electric ranges, according to announcement by A. T. Fish, vice president and sales director of A. J. Lindemann & Hoverson Co., maker of the ranges.

L. G. Poe will serve as head of the range division. Mr. Poe was sales manager of the electric range department of the A. J. Lindemann & Hoverson Co. and later directed sales of the range division of Landers, Frary and Clark, New Britain, Conn.

Dealer organizations will be set up on the same plan used by the distributor when it took on Norge refrigerators a few years ago.

WILLIAMS LAUNCHES BOOSTER CAMPAIGN

BLOOMINGTON, Ill.—Announced by a full-page advertisement in Bloomington newspapers May 1, a Boost Bloomington Business Campaign, staged by the Williams Oil-O-Matic Heating Corp. of this city, is now in its third week.

The campaign is centered around the slogan, "Your dollar does double duty now. You can install Williams Ice-O-Matic electric refrigerators at the lowest price in history, and keep local men at work."

Thirty-four Ice-O-Matics with an average price per unit of \$220 were sold during the first three days of the sale. Although the advertising featured some models at extremely low prices, none of those have been sold as yet. Larger cabinets have proved more popular.

Cabinets featured in the sale are sample boxes, plus a few of last year's models. Between 25 and 30 of the cabinets on sale are kept on display both in the showrooms of the Bloomington dealer and the factory display room. Price tags with the former prices of the boxes, as well as the campaign prices, are displayed.

Following the first announcement of the sale, an open letter from C. U. Williams, president of the Williams organization, and printed on a four-page folder illustrating Ice-O-Matic models, was sent to prospects.

Telegram blanks with a brief campaign message were distributed, and all advertising folders were delivered by hand to every home in Bloomington, and its adjoining city, Normal. Men to do this work were recruited from the unemployed ranks.

A thorough telephone canvass is being used to back up retail sales effort, and since the second week, employees of the Williams factory have pledged to make at least one sale.

STEADY ADVERTISING IN PAPERS BEST — MARSHALL

INDIANAPOLIS—A steady flow of newspaper advertising brings better results than an occasional wild plunge of advertising, William R. Marshall, advertising and sales promotion manager of Gibson Electric Refrigerator Corp., told Indiana dealers at a meeting recently.

The meeting, sponsored by the Peerless Electric Supply Co., distributor here, was held in the Hotel Severin, and was featured by speeches from factory executives.

Those who spoke included Frank S. Gibson, Jr., vice president in charge of sales, who had the subject "Personnel Back of Gibson Products"; E. F. Born, service manager; F. A. Delano, general sales manager, and G. M. Farrin, district sales manager, all of Gibson.

A. J. Natho, vice president of the Peerless Co., and H. E. Rasmussen, president, also appeared on the program.

'TOAST KING' TO BE SOLD BY REFRIGERATION STORES

GRAND RAPIDS, Mich.—A plan whereby the Double Action Mfg. Co., makers of the "Toast King" electric toaster, hopes to merchandise its product through refrigerator distributors and dealers, has been developed, the company announces.

The "Toast King," in which India mica is used, and which has a chromium plate finish, is the newest model manufactured by the company.

A pilot light glows bright red when the toast is finished, and the slice is kept warm by shutting off from the coils all but a very small portion of the electrical current.

LEONARD OFFICIALS HOLD NASHVILLE CONVENTION

NASHVILLE, Tenn.—McWhorter, Weaver & Co., Leonard electric refrigerator distributor here, was host to 70 dealers at its annual dealer meeting in the Noel Hotel recently.

Gene Bolich of Brooke, Smith & French; Lee Stratton, Leonard district sales manager; W. C. Weaver, president of the distributing company; L. T. Hudson, manager of the refrigeration department, were speakers.

Mr. Brainerd of the *Nashville Banner*, and Mr. Tanner of the *Tennessean* were guest speakers.

GENERAL ELECTRICS SOLD FOR NEW HOSPITAL

LIMA, Ohio—A contract for approximately \$10,000 worth of General Electric refrigerators, ice makers, biological cabinets, water coolers, etc., has been awarded to the Sweeney-Graham Co., dealer here, by the Board of Trustees of the new half-million dollar Memorial Hospital.

Howard Cook, salesman for the commercial sales outlet, obtained the contract.

COPELAND APPOINTS DISTRIBUTOR IN TEXAS

DALLAS, Tex.—Wadley, Inc., has been appointed distributor for Copeland electric refrigerators, according to announcement by W. D. McElhinny, vice president in charge of sales of Copeland Products, Inc.

The firm has been a distributor of building and insulation materials for years, and has now taken on radios and phonographs in addition to electric refrigerators.

B. N. Wadley, president of the firm, will have charge of dealer business in connection with Copeland sales. Mr. Wadley is a graduate of Texas A. & M. College and the School of Technology, Atlanta.

L. N. Oliphant, vice president, will direct commercial sales. W. G. Buster, secretary-treasurer, has been connected with the predecessors of the Wadley Co. for eight years.

L. N. Sanford, who has charge of city retail sales, has had utility experience and is a graduate of Texas A. & M. and the University of Arkansas. The radio and phonograph department is directed by Fred Erisman.

GENERAL ELECTRIC CO. SHOWS DECLINE IN ORDERS

SCHENECTADY, N. Y.—Orders received by the General Electric Co. for the first quarter of 1932 amounted to \$33,404,642, as compared with \$60,366,297 for the corresponding three months of last year, Gerard Swope, president of the company, announced at the annual meeting of stockholders held in Schenectady last week.

Sales billed for the first three months of 1932 amounted to \$37,876,399.05, compared with \$61,959,800.09 for the corresponding period last year.

Profit available for dividends on common stock for the first quarter of 1932 was \$4,508,667.85, compared with \$10,844,334.09 for the same three months last year, which is equivalent to 16 cents per share in 1932 and 38 cents in 1931 on 28,845,927 shares outstanding in both periods.

The quarterly dividend on the common stock, payable on April 25, is 25 cents per share, compared with 40 cents per share paid a year ago.

FALK APPOINTED CHAIRMAN OF KANSAS BUREAU

ABILENE, Kan.—C. F. Farley, regional director of the Middle West division, Electric Refrigeration Bureau, has announced the appointment of L. A. Falk of Abilene as state chairman of the bureau for Kansas.

Mr. Falk is commercial and merchandise manager of the United Power & Light Corp. here and as chairman of the local bureau has been active in the work of the organization for the past year. He succeeds D. E. Ackers of Topeka, Kan., who has resigned.

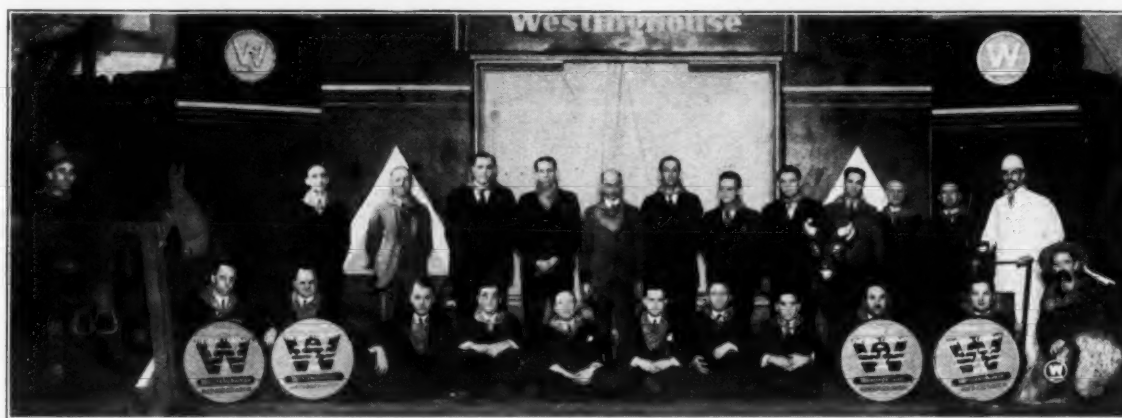
SALESMAN GETS 5 MILK COOLER ORDERS IN 5 DAYS

WAKEFIELD, R. I.—H. K. Johnson took five orders for milk cooling equipment in five days last week and, in addition, sold one household refrigerator. He is employed by the local branch of Frigidaire Sales Corp. of New England.

SIMCOCK NAMED ASSISTANT FRIGIDAIRE DISTRICT HEAD

BOSTON—L. F. Simcock has been appointed assistant to the manager of Frigidaire Sales Corp. of New England, succeeding F. F. Doten, who has been transferred to the factory at Dayton.

New Jersey Broncho Busters



Salesmen of the Elin Co., Newark distributor for Westinghouse, rode rough shod over competing Westinghouse men to win places as Line Riders in the Quota Busters Club.

How To Build Sales

As Told By Marshall Love, Servel Dealer

BOWLING GREEN, Ky.—The placing of refrigerators in homes for trial is the way in which Marshall Love & Co., Servel Hermetic dealer operating under Peaslee-Gaulbert Corp., Louisville, Ky., has built sales and a prospect list for its firm.

"We set our salesmen to work, not to sell refrigeration immediately, but to place as many Servel Hermetics in homes as we could find willing to give us space. We did not try to close the deals; we merely asked the housewife to use the electric refrigerator, and to show it to every friend who came to see her.

"We left each of the Servel Hermetics in homes for five or six days, then called them up and told them we were going to take it out of their way, never asking them if they were interested in buying. We kept this plan up for about three weeks, until the spring selling season opened. We then continued to make home demonstrations, but instead of taking the refrigerator out of the home we sold it."

Mr. Love reports that the plan was unusually successful. The homes of course, were "hand-picked" for the friendliest or most popular family in each neighborhood. The salesman in each case told the woman that it was the firm's method of advertising the line—that she would not be asked to buy.

Salesmen Aid Prospects

Every day or two the salesman called on these homes, asking if the housewife understood the operation, if there were any questions she wanted to ask, etc. He suggested salads and desserts which might be made in the refrigerator and in the end usually got one to three names of friends who had seemed to be interested.

This year for the second time the firm is trying the plan. At least two men are to be placed on making appointments for home demonstrations.

As an additional activity, the firm is calling on last year's customers to tell them that for every live prospect not already on the firm's list, \$5 in cash will be given when the sale is completed to that prospect.

The offer, Mr. Love believes, "gives them some incentive to call us, and it makes them talk up the Servel Hermetic to anyone calling at their homes."

TRITLE ELECTED TO OFFICE

EAST PITTSBURGH, Pa.—J. S. Trittle has been elected vice president in charge of operations of the Westinghouse Electric Supply Co., wholesale distributor of Westinghouse products.

ASSOCIATED GAS ELECTS BUCHSBAUM AS OFFICER

NEW YORK CITY—William Buchsbaum, a director of the Associated Gas & Electric Co. for the last three years, has been elected a vice president of the company and will be connected with the financial management of the company's system.

He was first associated with the Public Service Corp. of New Jersey, later joining the New York Edison Co., and after several years becoming an officer of W. S. Barstow & Co. He was a director and financial vice president of the General Gas & Electric Corp. before it was acquired by Associated Gas & Electric Co.

Mr. Buchsbaum's association with the public utility industry covers 30 years.

MANAGER OF GIBSON HAS 78TH BIRTHDAY

GREENVILLE, Mich.—John Lewis, vice president and general manager of Gibson Refrigerator Co., recently celebrated his 78th birthday and his 55th year in the refrigeration industry.

In 1876, Mr. Lewis entered the refrigerator business in Chicago. At that time he had been in this country but three years, having come from England. From 1876 to 1884 Mr. Lewis engaged in the manufacture of refrigerators in Chicago, and in the latter year he moved to Belding, Mich., to become associated with the Belding Mfg. Co.

Mr. Lewis has been in Greenville since 1892, when he became associated with F. E. Ranney and C. T. Ranney in the organization of the Ranney Refrigerator Co.

In 1908 he became associated with the late Frank S. Gibson in the organization of the Gibson Refrigerator Co. Since that time he has held the position which he now occupies.

DR. ALLISON RETURNS FROM ILLINOIS TOUR

NEW YORK CITY—Dr. G. W. Allison, field manager of the Electric Refrigeration Bureau, is back in New York City after a week's tour through Illinois where he addressed meetings in Harvey, Peoria, Decatur and Danville.

Each of these meetings was sectional, the four sessions being attended by distributors and dealers from a dozen Illinois cities.

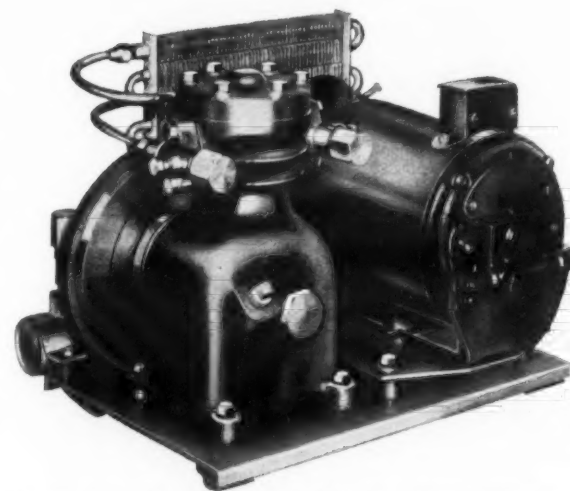
On May 23 Dr. Allison will address a meeting of the Electrical League of South Jersey at Camden, and on May 25 he will represent the bureau at the annual convention of the East Central Division of the N.E.L.A. at Toledo.

KELLOGG

COMPRESSORS

and Refrigeration Units

Backed by more than 25 years experience in air compression, KELLOGG offers an extremely compact, quiet and efficient compressor or refrigeration unit for household boxes, water coolers, ice cream cabinets, etc.



Up to 9 cu. ft. . . remarkably free from vibration.

Specifications: Model 43

Capacity: 120 pounds ice melting effect.

Compressor: Single cylinder 1 5/16" bore, 1 3/16" stroke, 500 R.P.M.

Displacement: .5 cu. ft. per minute; Volumetric efficiency approximately 65%.

Compressor Pulley: 7" diameter—furnished with or without belt groove.

Pressed Steel Frame—rubber cushion or spring mounting.

Shaft: Hardened steel with eccentric operated connecting rod.

Cylinder and Crankcase: Cast as single unit assuring perfect alignment of crankshaft with piston and connecting rod.

Shaft Seal: Bellows type designed so that

seal nose cannot lift off its seat under high crankcase pressures.

Suction and Discharge Valves: Located in removable plate directly under the cylinder head insuring accessibility.

Condenser: Finned tube with 2" diameter receiver underneath—1 1/2 lbs.

Refrigerant: Methyl Chloride.

Diameter of fan . . . 7".

Motor: 1/6 horsepower, 110 v. 60 cycle, 1 phase Delco motor.

Overall size complete unit: 15" long, 13" wide, 11 1/2" high.

Overall size compressor including shut-off valves: 10 1/4" high, 9" wide, 7" long.

Control: Thermostatic on cooling unit.

KELLOGG MANUFACTURING CO.

300 Humboldt St.

Rochester, N. Y.

Also manufacturers of larger Compressors and Units, Air Compressors, Paint Spraying Equipment and Vacuum Pumps.

Practical Recording THERMOMETER

Check the following exclusive features found in Practical Recording Instruments.

1. Non-breakable Face.
2. All metal parts nickel plated and rust proof.
3. Hinges are integral parts of case, no screws to get loose.
4. No loose parts, no chained parts.
5. Non-clogging pen of nickel silver, easy to fill and clean and never in the way.
6. A sturdy 36 hour New Haven clock, protected from condensation, wound, set, regulated from the rear without opening case or disturbing chart.
7. Compact case of Bakelite, 5 1/2" wide, 4 1/2" deep and 7 1/2" high, with space provided for ink bottle and 25 charts. 24 hour charts are 4" with lines clearly spaced with 15 minute divisions.
8. For safe and convenient carrying the Practical Recording Thermometer is fitted in a strong fibre case with handle and latch.
9. A one year guarantee goes with each instrument.

for Box Temperatures or Room Temperatures



The Practical Instrument Co. 2713 North Ashland Ave. Chicago

Unusual discount to refrigeration dealers and manufacturers

Gibson Distributors Push Spring Sales Campaign



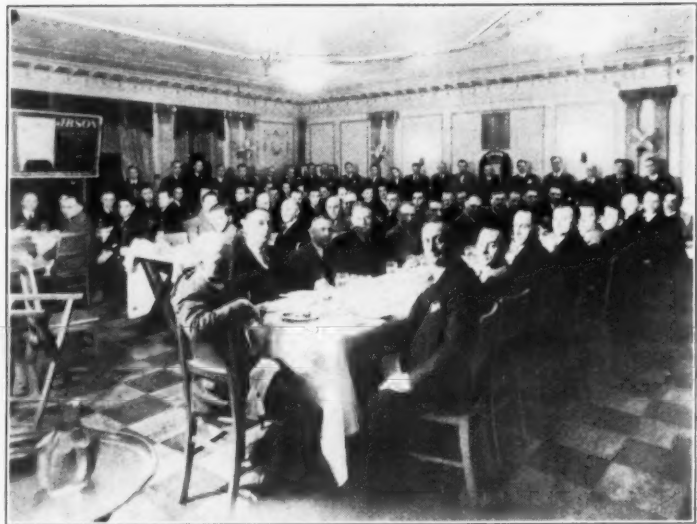
Gibson factory executives recently opened a sales campaign at a meeting of Morison Electrical Supply Co., Inc., New York distributor.



H. M. Pauley, Gibson special field representative, explains the operation of the Gibson.



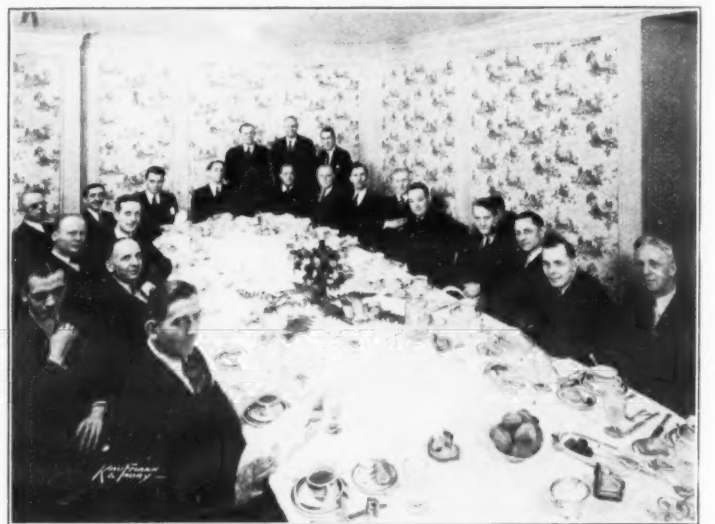
These salesmen of the Winne Sales Co., Minneapolis, heard the Gibson spring presentation at a meeting in the Curtis Hotel recently.



The good turnout at a recent dealer meeting sponsored by Morley Brothers, Gibson distributor in eastern Michigan, is shown above.



Walks around the Gibson plant are crowded with employees as the noon whistle blows.



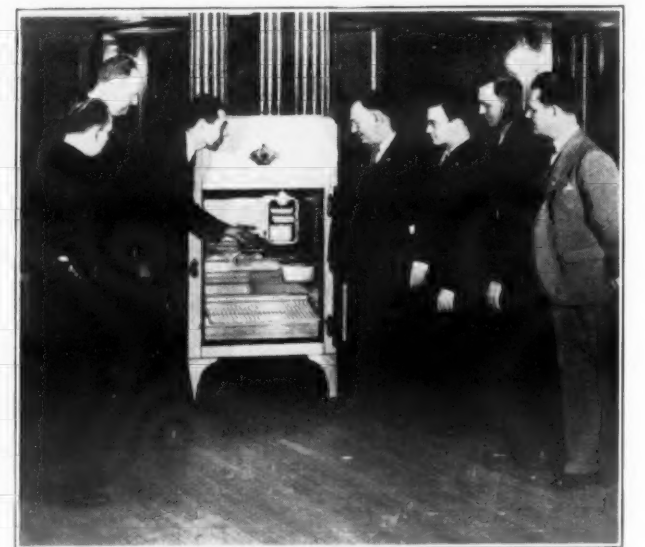
Sales executives of the Wiebolt Co., and John M. Smyth & Co., Chicago firms, meet after taking on the Gibson line.



This attractive display is on view under the auspices of the Louis Buehn Co., Gibson distributor in Philadelphia. The display was in the Philadelphia Show.



Governor Franklin D. Roosevelt of New York, arriving at the Pennsylvania Station, is greeted by Carmela Ponselle and Gladys Swarthout, opera singers, who sold him tickets to a G. E. gala broadcast.



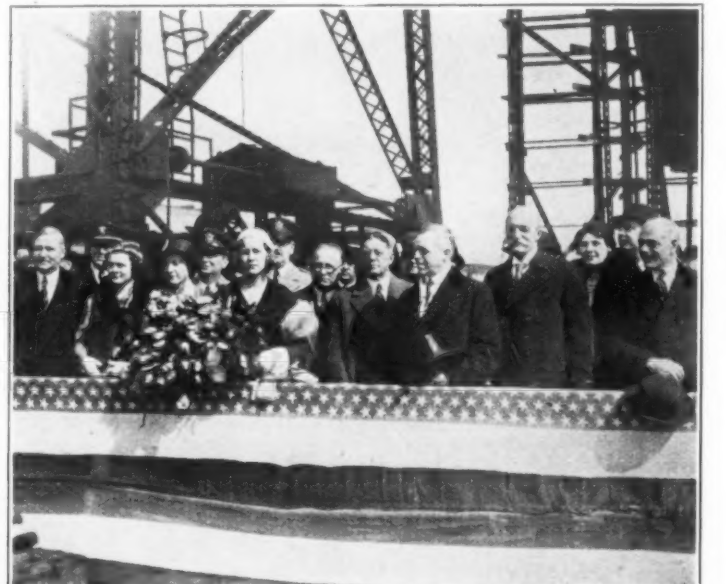
P. Y. Danley, merchandise manager, central district, Westinghouse Electric, explains features to American Radio Distributing Co. officials.



Residents of Milwaukee crowded the new showrooms of the E. H. Schaefer Corp., General Electric distributor, on its opening night. Notice inlaid linoleum monogram.



Tables of groceries, illustrating month savings through electric refrigeration, are on display during "Spring Opening" in Frigidaire showrooms.



Rex Cole (extreme right), New York distributor for General Electric refrigerators, was a guest at a recent steamship christening. Gov. Moore, of New Jersey and Gov. Pinchot, of Pennsylvania attended.

Billingsley Outlines Considerations In Extending Retail Distribution

By Allen L. Billingsley
President, Fuller & Smith & Ross, Inc.

THERE are certain fundamentals which must guide any manufacturer in building retail distribution on his product.

When a utility, because of its special current interest, begins to urge upon an electrical manufacturer an extension of his efforts to build retail distribution, the utility is bound to take a look at the proposition as the manufacturer would see it.

It is not enough to assume that a community of interest exists between the utility and the manufacturer. It is not safe to assume that all the manufacturer needs is a "dealer plan."

Inquire Into Distribution Plans

The utility should inquire into the manufacturer's basis of building retail distribution. It must examine specifically what cooperation it can extend. It must consider its own appliance-selling policies and methods as these aid or complicate the manufacturer's retail distribution-building.

There are, it seems to me, three considerations that are basic to any manufacturer's effort to broaden retail distribution under circumstances as they exist today:

1. He must concentrate his efforts on the more efficient outlets.

From the utility's viewpoint (load-

building) the utility gets some benefit from the sales activities of all retailers, regardless of their size, character, location, or merchandising ability. From the viewpoint of dealer relations, the utility might define an ideal "dealer plan" as one that embraces everybody—large dealers, small dealers, hardware stores, electrical contractors, efficient dealers, inefficient dealers.

In determining the cooperation which it can extend, it is not unnatural for the utility to think of distribution in broad terms, and as including all classes of retailers, all of whom the utility feels it must treat approximately alike.

The experience of most manufacturers, however, inclines them to think in an opposite direction.

Quality of Outlets

It is a common experience for a manufacturer with hundreds of retail outlets to find that 20 per cent of them give him 70 or 80 per cent of the total sales volume he gets from the territory.

Such a manufacturer tends to think of distribution-building, not in terms of great numbers of outlets, but in terms of quality of outlets.

He is not so much interested in widespread retail distribution as in high character of retail distribution, with efficient outlets located in important trading centers.

He wants fewer dealers who merely stock his product, and more who understand merchandising, are intelligent and aggressive, and can actually sell the product.

Selective in Approach

He is, in other words, selective in his approach to building retail distribution—and it is right that he should be.

What does this mean to the utility man who wants the manufacturer's help in building retail distribution? Among other things, it means that he must define accurately his own dealer-cooperation policy.

It should lead him to examine more closely what he knows (in terms of efficiency) of the existing retail distribution in his territory. It should make him ask what he is doing—and what he is willing to do—to encourage efficient retailers specifically.

It prompts the question of whether he can differentiate between efficient and inefficient dealers without harm to his dealer-relations, and what policy or degree of differentiation he can follow.

Must Create Distribution

In many desirable areas, before a manufacturer can get suitable retail distribution it is necessary for him to create it. The outlets are not now there. What can the utility man do to help him enlist the right type of merchandising retailers?

I feel that I can raise these questions, without attempting to answer them, because merely to state them will be valuable, suggestively, to the utility executive's thinking. They are typical of the questions which the manufacturer faces. It does seem to me that efficient dealers must be the goal of both the utility

and the manufacturer in any joint program to build retail distribution. Efficient dealers will give the manufacturer a satisfactory volume. They will make money for themselves.

Because they are efficient they will see the advantage of cooperating with the utility, will not fear it, and will ordinarily tend, through leadership, to keep down unfavorable agitation on the part of other retailers.

Selectivity must, I believe, mark distribution-building plans for the utility and for the manufacturer.

Established Brand Name

2. Any extensive plan of retail distribution based on independently owned outlets, usually must be built around a well-established brand name.

To the manufacturer engaged in national distribution, using advertising and sales promotion to interest dealers and help them move his goods, the brand of his product is all-important.

It is the symbol which distinguishes the goods of his make. It is his warranty to consumers. It is the greatest help he can give to retailers who know how to merchandise in the modern way. It is a basic necessity to retailers of that type.

In its own territory, however, the utility usually has sufficient standing to be able to take unbranded merchandise, or merchandise of unknown name, and by backing it with the utility endorsement and selling efforts, create acceptance for it and make sales.

By reason of this, utilities frequently under-value the importance of brand strength when they think of the operations of the national manufacturer and his retailers.

If the utility desires to encourage manufacturers in extending their retail distribution, it seems to me essential that it declare itself on the question of established brands of merchandise.

Not only is the broad question of national brands involved, but also the extent to which the utility will push and sell little-known brands of merchandise through its own retail organizations in competition with other retailers.

Use of Utility Brand

I realize that it is some advantage to the utility, in its own appliance selling, to have products that are not handled by other retailers. I can see that limiting itself to national brands might deprive the utility of merchandising advantages which are important.

On the other hand the utility must appreciate that if a manufacturer of a product with an unknown brand can get the utility's business, that puts the manufacturer with a national brand at a serious disadvantage.

The manufacturer without an established brand does not have either the expense or the responsibilities that go with brand building. He often has no retail distribution because of lack of recognition for his brand.

When the utility takes on his goods, he gets recognition, a sales volume, and a means of building distribution that the national brand manufacturer is deprived of. Still, the utility relies on the latter manufacturer to develop retail distribution in its territory.

Competition of Brands

If the utility had no interest in the distribution-building efforts of manufacturers, there would be no argument against by-passing the established brands. But it has such an interest—yet its policy sometimes imposes a serious handicap on the established brand manufacturers.

These latter then are forced into the position of competing with the utility, and the community of interest that should exist between the utility and the manufacturer fails to operate.

I realize that this situation is a complicated one, and that there are many angles to it. All I am trying to suggest is, that if a utility wants seriously to encourage manufacturers with established brands to broaden their retail distribution, the utility is placed, by that very desire, in a different position than though it were merely an appliance selling concern.

Its own merchandising policies must in some measure be squared with the policies that are imposed on manufacturers by the requirements of building sound retail distribution.

Stable Price Structure

3. A stable price structure is necessary to build sound, profitable retail distribution.

Utilities have always given their support to quality merchandise. While so doing, however, it has become increasingly apparent to them that attractive prices on appliances ease the way for sales acceptance, and thus accelerate load-building.

The problem here is to enable more consumers to gain the benefit of attractive prices without at the same time disrupting margins and price structures so that manufacturers and independent retailers will cease to do aggressive selling.

This also is a question of reconciling the requirements of distribution building with those of utility appliance selling. As a merchandising outlet, the utility can buy appliances from manufacturers who do little distribution building, maintain no brand advertising, confine their efforts to large outlets. It can buy appliances from such man-

ufacturers at prices which the manufacturer operating on a brand-building basis cannot ordinarily duplicate.

When the latter manufacturer sees the utility supporting manufacturers who do not make the same contribution to the development of the industry which he feels he makes, you can see that the manufacturer with an established brand feels that the utility penalizes him for doing precisely the constructive work that its broad interest in load-building prompts the utility to encourage him to do.

Education and Advertising

I do not know what the answer to this question is in terms of utility policy. I am sure that some recognition must be given to the fact that if a national-brand manufacturer builds distribution, he must follow certain long-haul policies of education, advertising, product improvement, market development work. That costs money.

Agencies like utilities, who benefit from such work, will certainly not want to appear to discount its importance, nor to make manufacturers who follow such policies feel that they are under serious handicap because they do follow such policies.

On the other hand, the utility cannot be expected to give a manufacturer a claim on its business simply because

he does the things necessary to build retail distribution.

It certainly cannot free the manufacturer from pressure aimed at securing lower prices.

It can, however, guide its policies and exert its influence so that the manufacturer will see that the dealer policies he thinks necessary to set up for broad and constructive development of the whole area of his market are not interfered with.

Other Considerations

There are many other considerations that arise in connection with this whole problem of cooperating with the manufacturer to broaden retail distribution.

The wholesaler and his service has an important place in it; certainly a utility that seeks to broaden retail distribution in its territory will want to make a valuable ally of the wholesaler, who has, it seems to me, a special service to render in this regard which is not equally true of the wholesaler in other industries.

I feel that much is to be gained by frank, full and penetrating discussion of this subject between all sales factors in the electrical industry. I have only ventured here to sketch some of the high-spots for the purpose of giving a little better appreciation of a manufacturer's line of thought on some of the questions.



Faster, safer deliveries with

WEBB
Slingabout
Registered U. S. Patent Office

Up the steps in jig-time goes the refrigerator delivered in a WEBB Slingabout. The strong webbing sling, reinforced with sole leather, offers convenient hand-holes on every side.

Safety to the refrigerator and to the walls and woodwork of your customer's house is assured by this thickly padded, flannel-lined canvas jacket.

Tell us what line you handle and we will gladly quote prices.

WEBB Manufacturing Company
Amber & Willard, Philadelphia

Tells and Sells

PLACED inside the housewife's old-fashioned ice-box, BRISTOL'S handy little portable Model 144 Temperature Recorder tells if the prevailing temperature is consistently above 50° F., and so if it is too high for the proper and safe preservation of food.

There's no chance for argument.

THE BRISTOL COMPANY • WATERBURY • CONNECTICUT

Branch Offices: Akron, Birmingham, Boston, Chicago, Denver, Detroit, Los Angeles, New York, Philadelphia, Pittsburgh, St. Louis, San Francisco

BRISTOL'S

TIME AND TEMPERATURE RECORDERS

for Refrigerators



BRISTOL'S Model 144 Temperature Recorder. For giving a continuous 72 hour or 3 day chart record of refrigerator temperature. Handy. Portable. No trouble or fun to install.

Model 144 gives a convincing continuous 72 hour record.

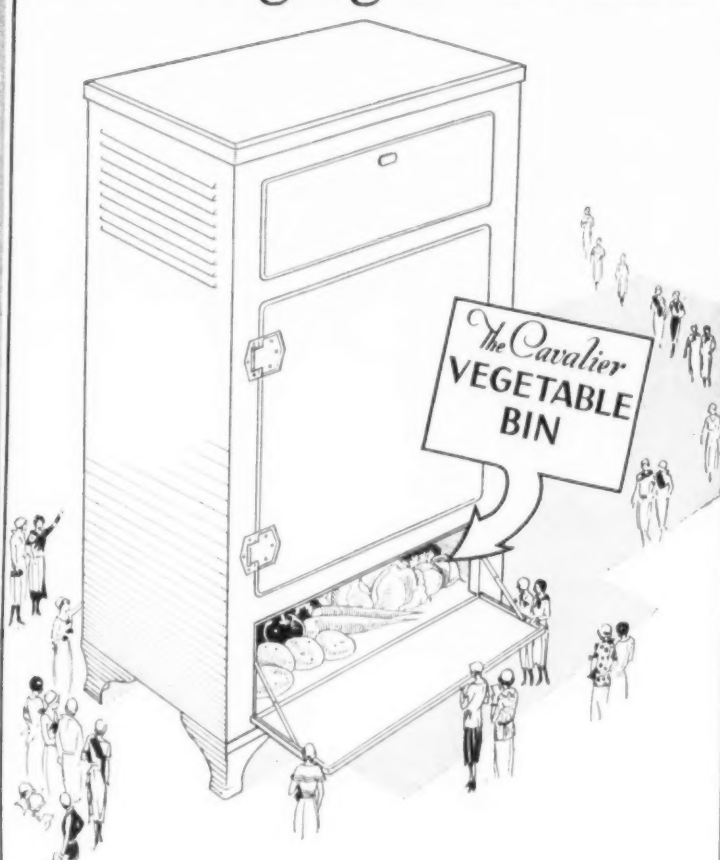
Think of the sales opportunities which Model 144 in this way makes possible for promoting electric refrigerator business!

Leaflet No. 381 gives the details you will want.

Copy promptly mailed on request.

CAVALIER ELECTRIC REFRIGERATORS

Women Everywhere Are Singing its Praises



WOMEN all over the nation have registered their approval of Cavalier's new vegetable bin—by buying the Cavalier Electric! But the vegetable bin isn't the only outstanding feature . . . with which you may appeal to exacting buyers. There are nine main talking points; nine selling points . . . and surprisingly reasonable prices. * * * Investigate the profit possibilities the Cavalier offers you. There are a few desirable territories—with exclusive franchise—still open. Write, or better still, wire for information.

CAVALIER
ELECTRIC



Refrigerator Division

TENNESSEE FURNITURE CORPORATION
Chattanooga, Tennessee

Manufacturers of mechanical units will find our cabinet manufacturing service complete and thorough in every detail. Complete information supplied without obligation.

How a Distributor Operates

As Practiced By Toledo Oil-O-Matic Distributor

By Phil B. Redeker

TOLEDO—Dealers in Williams Ice-O-Matic refrigerators in the 24 Ohio counties and the three Michigan counties that comprise the territory covered by the Heat and Power Engineering Co., Toledo distributor, all have merchandising set-ups for the exclusive sale of refrigeration.

As part of its dealer policy, as explained by Sales Manager E. M. Gresham, the distributor demands that each established dealer maintain at least one salesman selling refrigeration exclusively, that he keep a floor display, and that he advertise in local papers.

The dealer, in return, gets the fullest measure of cooperation from the distributor. No attempt is made by the Heat and Power Engineering Co. to get the dealer to handle any of the many other appliances distributed through their office. A certain allowance is made on each box sold by a dealer for advertising purposes, and the distributor goes in with the dealer on local advertising on a 50-50 basis just as far as the dealer wants to go.

Small town papers provided the best advertising mediums in a territory like that handled by the Heat and Power Engineering Co., in which there are no far-reaching metropolitan dailies, points out E. M. Gresham.

Direct mail pieces are sent to the dealer on request, the dealer carrying out his own mailing. Gresham thinks

that the more the dealer has to do with selling efforts, the more interested in his work he becomes.

One-day training schools are held at monthly intervals in Toledo, and both dealers and salesmen are urged to attend these meetings to learn of new developments in the Ice-O-Matic line, and to hear discussions of current merchandising problems.

Dealers are also trained to make minor service repairs. Major service work is handled out of a central department maintained in Toledo. The Williams unit allows service to be done either in the home, or at the store, the latter being accomplished through removal of the unit. This simplifies the service problem considerably, Gresham states.

In the city of Toledo, the Williams distributor operates on both a retail and wholesale basis.

In its retail operations, the Heat and Power Engineering Co. works strictly in accord with the "cold canvass" theory of specialty merchandising.

Card 'Real' Prospects

Salesmen work from door to door to contact prospects, and when they feel that a certain contact is a real prospect, they "card" him. Salesmen get only 30 days in which to sell a prospect. After that time, the name is given to another salesman or put away in the files to be contacted at some future date.

"Too big a prospect list is a hindrance to a salesman," Gresham explains. "If he has a large list, he will likely be running around in circles, and not doing a thorough job on those he does contact. We urge concentration on a limited number of good prospects."

The retail sales manager spends the greatest share of his time acting as a closer, Gresham points out. Salesmen are required to take along the "closer" on at least one afternoon or evening follow-up call, and are urged to take even greater advantage of this selling help.

"The number of sales lost by men who were good at contacting, but not so good at closing taught us the value of getting a good 'closer' in wherever possible," Gresham says. "Then, too, the salesman will learn a lot by working with a man who can close sales."

3-piece Mail Campaign

Prospects are barraged with a three-piece direct mail campaign as soon as they are carded, the mailings being staggered to fall in between the time of the salesman's calls.

In advertising in Toledo proper, the Heat and Power Engineering Co. uses a type of advertising in the Toledo dailies which is perhaps unique. A single small ad is placed in the classified advertisements section every other day during the refrigeration selling season.

This small but perpetual impression is bringing direct results, Gresham states.

The good refrigerator salesman is also a good oil burner salesman, Gresham believes. The Heat and Power Engineering Co. handles the Williams Oil-O-Matic line.

The type of salesmanship is pretty much the same with both appliances, and the salesman of one can become an effective salesman of the other by becoming versed in the mechanical points and features of its applications.

RETAIL SALES TAX PASSED BY MISSISSIPPI SOLONS

JACKSON, Miss.—A bill levying a 2 per cent gross sales tax on Mississippi retail merchants now awaits the signature of Governor Mike Connor.

The bill also places a tax on utility companies selling domestic and commercial electricity or gas. If the governor signs, the bill is expected to go into effect immediately.

The measure is a temporary one designed to meet the largest deficit ever faced by the Mississippi state treasury. It will automatically expire June 30, 1934.

To protect small merchants from ruin, a clause provides exemptions for merchants doing business of \$1,200 or less.

ENGINEER JOINS SALES FORCE OF G. E. DISTRIBUTOR

TOLEDO—Vernon Robinson has just been appointed to the retail sales force of the H. G. Bogart Co., General Electric distributor here.

Mr. Robinson is a graduate electrical and mechanical engineer. After graduation he took the complete electrical testing course at General Electric Schenectady works, and was then transferred to Ft. Wayne, Ind., for the factory management course.

On a recent visit to Toledo, the sales end appeared so attractive to him that he decided to sever his connection with the manufacturing side, and became a salesman with the Bogart company.

DONOVAN WRITES ON APARTMENT MARKET

CLEVELAND—"Apartment buildings today are out of the hands of speculative operators and have reverted to the larger operating companies such as banking and mortgage firms; and under their management the decision to purchase refrigeration is based not on price but on the basis of a total cost of refrigeration service over a period of years, after they have totaled all the items that are chargeable to that service," states J. J. Donovan, former manager, apartment house division of the General Electric refrigeration department, and recently appointed manager of the air conditioning department.

"Apartment operators today have more than just capital costs to consider," Mr. Donovan continues. "There is a very definite relation between the capital cost of refrigeration equipment and its relation to operating cost, operating income and depreciation and obsolescence."

"Their judgment in selecting equipment for buildings today is guided by experience plus the element of time which has enabled them to observe what constitutes low cost in refrigeration service."

"With the downward trend in the rental scale, they are confronted with the problem of making the rental dollar go as far as possible in defraying their obligation. Equipment which continually uses any part of the rental dollar in operation cost and maintenance cost is today a definite liability."

H. C. PARKER OPENS SALES OFFICES IN FOUR CITIES

LOS ANGELES—Offices have been opened in Chicago, St. Louis, Houston, Tex., and Des Moines, Iowa, by H. C. Parker, Ltd., manufacturer of commercial and household electric refrigerators.

Orders and inquiries from Asiatic and European countries indicate a lively foreign interest in electric refrigeration, according to H. C. Parker, president. Commercial equipment has recently been shipped to Barcelona, Spain, and household machines have been purchased in Czechoslovakia. Because of the high tariff and exchange, the firm in Czechoslovakia plans to buy condensing units and evaporator coils in this country for assembly over there.

Parker agents in Shanghai, China, believe the Chinese market will become active as soon as peace again prevails there, especially in areas which were shelled during the recent warfare.

Direct expansion coils are being shipped to England for use in refrigerators of English manufacture, Mr. Parker reports, while inquiries from Bombay, India, and Havana, Cuba, promise attractive business in water cooling equipment in the warm countries.

GIBSON DEALER USES TWO YOUNG WOMEN IN SELLING

PHILADELPHIA—Two young women, attractive and intelligent, drive up before wealthy homes in Philadelphia's suburbs and sell Gibson refrigerators and Westinghouse ranges for Willrath's, Inc., Gibson dealer here.

The young women, carefully trained in salesmanship, work as a pair in making their calls, "and are far and away ahead of the average salesman in getting a cordial reception from the housewife," says J. R. Wilson of the firm.

They do not "cold canvass," but usually have a prospect list before them. Before they call, a notice is sent to the prospect that the call will be made, and that a "log book" for handling her household budget, will be given her. After the interview, the prospect receives a letter from the firm, thanking her for the interview.

Both saleswomen can tell the housewife the fine points of refrigerator and electric range cookery.

'JUMBO' KELVINATOR USED IN S. P. U. SHOWROOM

CHARLOTTE, N. C.—A "Jumbo" refrigerator, duplicating in appearance a 1932 model DeLuxe Kelvinator, but several times its size, draws interested crowds into the Kelvinator showroom of the Southern Public Utilities Co., here.

The box is approximately 14 ft. high, and is identical with the real Kelvinator even to cloisonne name plate, design of the legs and hardware, and French gray trim.

It was necessary to take down the main revolving doors of the Power Building and bring the model through the door lying on its side. It barely clears the ceiling beams.

Last year a similar model was mounted on a truck and driven through the streets of Charlotte and surrounding towns, but became so weatherbeaten after a few thousand miles that a new "Jumbo" was built this year.

BUYER'S GUIDE

Manufacturers Specializing in Service to the Refrigeration Industry

SPECIAL ADVERTISING RATE (this column only)—\$12.00 per space. Payment is required monthly in advance to obtain this special low rate. Minimum Contract for this column—13 insertions in consecutive issues. All advertisements set in uniform style of type with standard border. Halftone engravings of 100-line screen, either outline or square finish. No reverse cuts or heavy black effects. No charge for composition.



SELF-LIFTING PIANO TRUCK CO. FINDLAY, OHIO

X-70 REFRIGERATOR TRUCKS

Save one man on deliveries. Make heavy lifting easy—quick. Eliminate damage to cabinets—floors—walls. Fit all cabinets, with or without legs, or in the crate. Capacity, 1,200 lbs. All steel frame, 4" rubber tired wheels, one truck with top casters and handles for tilting and rolling into delivery truck and on the stairs. Only pads touch cabinet. Built to last a lifetime. Complete set \$38. Ball bearing swivel casters on one end, \$5 extra.

FINDLAY REFRIGERATOR TRUCKS

The only practical trucks at this unheard of price level. Light weight trucks—for all sizes of leg cabinets only—padded steel frames—4" rubber tired wheels. Good trucks for the money. Per set, \$18.00. Write for complete description. Manufacturers of Trucks for 32 Years

BARE COMPRESSORS

New 1/6 H. P. Twin 1 1/4" x 1 1/4"

For Sulphur Dioxide or Methyl Chloride

Other Sizes 1/6 H. P. to 50 H. P.

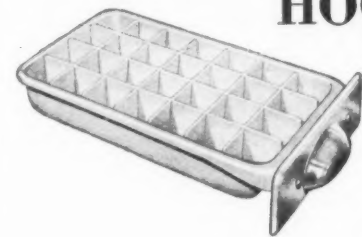
"PARKER" Refrigeration Since 1899

H. C. PARKER, LTD.

2600 Santa Fe Ave. (Factory), Los Angeles, California
510 Larkin Street, San Francisco, California
392 Clifton Ave., Newark, New Jersey



HOOSIER PARTS



Complete—Assembled—Packaged—Ready for shipment in your Refrigerator. Typical 28-cube tray shown is aluminum with patented Alumilite Anodic treatment and chrome plated handle—size overall 5 11/16" wide by 10 1/4" long by 1 5/8" deep with 6 7/16" x 1 15/16" Handle. Many other sizes and styles. Write for details.

Dessert Trays—Defrosting Pans

HOOSIER LAMP & STAMPING CO., EVANSVILLE, IND.



Electrical Refrigeration Parts and Supplies

We Carry in Stock:

COMPRESSORS—EVAPORATORS—THERMOSTATS—VALVES AND FITTINGS—THERMOSTATIC AND AUTOMATIC EXPANSION VALVES—COPPER TUBING—CONTROLS—AND MANY OTHER PARTS

Melchior, Armstrong, Dessau Co.

116 Broad Street, Telephone Bowling Green 9-8870, New York, N.Y.



SURECOLD

\$99.50 Retail Price

Porcelain lined cabinet.

Simplified condenser with only three moving parts.

A better job that's more for the money.

The Warner Steel Products Co.
Ottawa, Kans., U. S. A.

Fruit & Vegetable Baskets Mechanical Springs Wire Food Shelves

We give prompt service and excellent workmanship. Send us your inquiries.

L. A. YOUNG SPRING & WIRE CORP.
9200 Russell St. Detroit, Mich.

The 1932 Refrigeration Directory and Market Data Book

470 pages of facts, figures and names—the most complete statistical data and buying information ever compiled for the refrigeration industry. An invaluable reference book for sales, engineering, and purchasing executives; for distributors, dealers, salesmen and servicemen.

\$2.00

Postpaid in U. S.
Foreign postage, 50 cents extra.

BUSINESS NEWS PUBLISHING CO.
550 Maccabees Bldg., Detroit, Mich.

Dealers! You need these
Finest Quality Enamel.
PRICES RIGHT.
orders filled promptly.

875 Doz. 450 1/2

Fulco
Refrigerator
COVERS

Insure deliveries without scratched or broken enamel. Write for prices.

Fulton Bag & Cotton Mills

THE IMITATION FOOD PRODUCTS CO.

107 Lawrence St. Brooklyn, N.Y.

Ask for catalog of March, 1932

30 items in 1934—175 Now

We are proud of our eight years record
Many favorable comments. No complaints

Refrigerator assortments:

Get-Acquainted Set—6 pieces \$4.15
A—15 pieces \$9.15 B—25 pieces \$14.45
C—30 pieces \$19.80

Mastercraft Refrigerator Pad and Carrying Harness



The Mastercraft Pad and Carrying Harness are adjustable to all sizes refrigerators to 11 cubic feet capacity. They are sturdy, convenient and inexpensive. Recommended by all leading manufacturers. Pads attractively lettered with refrigerator name.

Write for special pad booklets.

BEARSE MANUFACTURING CO.
3815-3825 CORTLAND ST. CHICAGO, ILL.

Taylor Refrigerator Test Thermometer

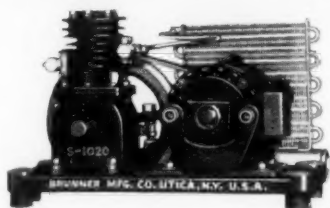
Use this Taylor Thermometer to test refrigerators and know your check is accurate. Reliable, easy-reading—in a handy pocket-size metal case. Range -30 to 120° F. Send for one. Safe delivery guaranteed, postpaid.

\$1.50, list

Write for our quantity prices and discounts.

Taylor Instrument Companies
ROCHESTER N.Y. U.S.A.

Built and Priced to Get the Business



26 years' experience has taught us how to build to high standards of quality on a price basis that helps you get the business. Get the complete Brunner story! Refrigeration Division, Brunner Manufacturing Co., Utica, N. Y.

HIGH SIDES and COMPRESSORS by BRUNNER

A big waiting market for Commercial Refrigeration Equipment

BOTTLE COOLERS

Five Models for Your Commercial Compressor Units. Now is the season to "cash in" on this sure market.

Ask for Catalog "R" and tell us what line of commercial compressors you handle.

S & S PRODUCTS CO. 15 Ree St. LIMA, OHIO
Exclusively Bottle Cooler Manufacturers

Delivery--Warehousing Service

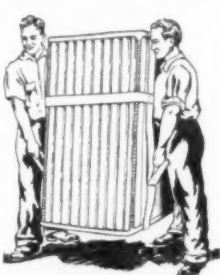
We are specialists in warehousing, delivering and installing all types of Domestic and Commercial Refrigerators.

Our Warehouse is Fireproof, steam heated and protected by sprinkler system. We have our own Railroad Sidings.

Rates Are Nominal
Correspondence and Inspection Invited

M. & L. CO.

177 Pacific Street, Brooklyn, N. Y.
168 E. 33rd St. New York City 711 E. 139th St.



Specially designed REFRIGERATOR COVER and CARRYING HARNESS

Form-fitting covers made of canvas outside—moleskin lining inside—with thin felt filling, firmly stitched. Impossible to rip. The "E-Z" Lift web harness eliminates strained backs and delivers the heaviest refrigerator with a minimum of effort. Easy grip.

Web Harness—\$7.00 Complete
Covers—\$8.00, \$10.00 and \$12.00

America's largest pad manufacturers

NEW HAVEN QUILT & PAD CO.
80-86 Franklin St., New Haven, Conn.

TO THE CANADIAN TRADE

You can get quicker delivery at lower cost by ordering from us

We carry in Stock

COMPRESSORS—COMPRESSOR UNITS—NON-FROSTING COMMERCIAL COILS—BOILER TYPE COILS—COPPER TUBING—FLARE AND SOLDERING FITTINGS—THERMOSTAT AND PRESSURE CONTROLS—DEHYDRATED OIL—AND MANY OTHER PARTS.

THE ARCTIC ICE & FUEL CO., LIMITED
Winnipeg, Man.

Subscribe Now and Save Money

Special Offers

Note—Combination rates are for United States only.

COMBINATION OFFER No. 1
Electric Refrigeration News 1 Year
and
Directory and Market Data Book
Combination Price \$4.00. Saves You \$1.00

COMBINATION OFFER No. 2
Electric Refrigeration News 2 Years
and
Directory and Market Data Book
Combination Price \$6.00. Saves You \$2.00

COMBINATION OFFER No. 3
Refrigerated Food News 1 Year
and
Directory and Market Data Book
Combination Price \$2.00. Saves You \$1.00

COMBINATION OFFER No. 4
Refrigerated Food News 1 Year
and
Electric Refrigeration News 1 Year
Combination Price \$3.50. Saves You \$0.50

COMBINATION OFFER No. 5
Directory and Market Data Book
and
Refrigerated Food News 1 Year
Combination Price \$4.50. Saves You \$1.50

BUSINESS NEWS PUBLISHING CO., 550 Maccabees Bldg., Detroit, Mich. 1932

☐ Enclosed is remittance for \$.....
☐ Please enter my order for COMBINATION OFFER NO. at \$.....
☐ Enter subscription to Electric Refrigeration News ☐ 1 Yr. \$3.00. ☐ 2 Yrs. \$5.00.
☐ Enter subscription to Refrigerated Food News ☐ 1 Yr. \$1.00. ☐ 2 Yrs. \$1.50.
☐ Send 1932 Refrigeration Directory and Market Data Book. \$2.00 per copy.

Name
Address
City State
5-18-32

REQUESTS FOR INFORMATION

Please refer to the 1932 Refrigeration Directory and Market Data Book for a complete list of all manufacturers of refrigeration equipment, parts, materials, supplies and accessories; also for all available statistical data on sales of refrigeration equipment, distribution methods, etc.

To obtain a copy of this book send \$2.00 to Business News Pub. Co., 550 Maccabees Bldg., Detroit, Mich.

Advertisers will be given preference in published answers to requests for buyer's guide service, but a complete list of all known suppliers will be mailed if stamped, self-addressed envelope is enclosed with inquiry.

Readers who can be of assistance in furnishing correct answers to inquiries, or who can supply additional information, are invited to address Electric Refrigeration News, mentioning query number.

Artificial Foods

Query No. 787—"Will you kindly furnish us with the name and address of the company which manufactures artificial food displays for electric refrigerators?"

Answer—Six such companies are listed on page 362 of the 1932 REFRIGERATION DIRECTORY and MARKET DATA BOOK.

Radio Sales

Query No. 788—"We would like if possible to purchase a directory and market data book on the radio business, and believe that you can supply us with such data."

Answer—The 1932 REFRIGERATION DIRECTORY and MARKET DATA BOOK contains two pages of statistics regarding the sales of radio receivers by years. Similar data on other electric devices are also given for comparative purposes, but otherwise the book is devoted entirely to refrigeration.

Service Companies

Query No. 789—"If you have a list of the independent refrigeration service men located in the various parts of the country, would appreciate it if you would forward a copy."

Answer—A complete list of independent service companies may be had on page 348-352 of the 1932 REFRIGERATION DIRECTORY and MARKET DATA BOOK.

V-Type Belts

Query No. 790—"Kindly send me the names of manufacturers of V-type belts for refrigeration use."

Answer—See page 212, the 1932 REFRIGERATION DIRECTORY and MARKET DATA BOOK.

Ranco Thermostats

Query No. 791—"Will you advise us the name and address of the company which makes Ranco thermostats, methyl chloride type? Also if possible who their New York agents or distributors are."

Answer—Automatic Reclosing Circuit Breaker Co., 1304 Indianola Ave., Columbus, Ohio. We suggest you write direct for the names of their New York agents.

Frost King and Buckeye Refrigerators

Query No. 792—"We would be pleased to learn the addresses of the manufacturers of Frost King and Buckeye electric refrigerators."

Answer—Buckeye refrigerators are manufactured by Domestic Industries, Inc., 282 North Diamond St., Mansfield, Ohio. We have no record of a refrigerator bearing the trade name "Frost King."

Sales Figures

Query No. 793—"Some time ago we had a tabulation showing the percentage of retail and wholesale refrigerator sales, but this tabulation included only sales through 1928. If you can furnish us with later information showing both retail and wholesale sales we would appreciate it very much."

Answer—A survey of 497 distributors and 20,879 dealers, as well as all other available facts and figures on household and commercial refrigerator sales to the end of 1931, appears on pages 31 through 38, of the 1932 REFRIGERATION DIRECTORY and MARKET DATA BOOK.

Answer to Back Query

Query No. 750—"What is the name and address of the manufacturers of 'Duchess' electric refrigerators and 'Duchess' electric washing machines?"

Answer—L. Siskind, vice president of the Harrison Wholesale Co., Peoria St. at Washington Blvd., Chicago, informs us that Duchess electric refrigerators and washing machines are made for his firm.

SERVEL DISTRIBUTOR ISSUES CHALLENGE

SAN ANTONIO, Tex.—A challenge for refrigerator sales this year has been received by the A. F. Beyer Co., Servel Hermetic distributor in this territory.

The Snell-Hocker Hardware Co. recently appointed dealer by the Beyer Co. for Servel Hermetic electric refrigerators in this city, has announced that it expects to sell more Servel Hermetic refrigerators here than the A. F. Beyer Co.

G. E. FORCES ADVANCE ON ALL FRONTS IN WAR DRIVE

(Concluded from Page 1, Column 3)

of the Harrison organization, Newark, and is fighting to retain its lead.

The Gentsch-Thompson troops, Boston, made the greatest advance in their field since the opening of the campaign. Lt. Gen. J. E. Neely, of Modern Home Utilities, Inc., Waterbury, Conn., also advanced against stiff opposition from "Sales Resistance." The Frank Wolf, Inc., army, Buffalo, advanced on all sectors.

On the central front, General A. F. Head still holds his rank, with Lt. Gen. L. T. Milnor, Cincinnati, as his nearest rival for it. Lt. Gen. W. H. Ocholtz, Pittsburgh distributor, made a good advance aided by the sale of 65 General Electric water coolers to equip the Allegheny County Court House.

Largest gains on the Southwestern front were reported by H. A. Pendergraph, Memphis, Tenn., and Lt. Gen. A. G. Riddick, New Orleans, S. C. Griswold, Dallas, Tex., and R. C. Wright, San Antonio, Tex.

On the Midwest front, Gen. Sydney Caswell, Detroit, still leads despite efforts of R. Cooper, Jr., Chicago, to replace him. In the Rocky Mountains, Gen. A. J. Finck, Denver, found little opposition from the enemy. Gen. H. H. Courtwright, Fresno, Calif., had little difficulty in retaining his rank on the Pacific Coast, despite advances made by George Belsey Co., Ltd., Los Angeles.

LITERATURE OF MANUFACTURERS

Catalogues, bulletins and other materials recently issued.

Manufacturers are requested to send copies of new trade literature to Electric Refrigeration News.

Gibson Refrigerators

A large portfolio with illustrations and samples of the various types of Gibson advertising and sales promotion helps, has been brought out for the use of distributors and salesmen.

Advertising copy for newspapers, with electrotypes if desired, was illustrated. Slogans, shields, window and display signs are also available. A photograph portfolio for salesmen is described. Showroom and direct mail literature, and sales helps such as the Gibson menu file, accessories, the "Pakkold," were described in full.

American Beauty Refrigerators

A simple four-page folder in two colors, titled "Why the American Beauty Refrigerator is the logical choice of every American home," is available to dealers for the American Refrigerator Co., Dayton.

Close-up pictures of various features of the refrigerators, such as the ribbon-type shelves, chromium plated hardware, stainless aluminum trays, front panel ventilation, and a diagram of the refrigerator as a whole, with arrows pointing out various features of construction, occupy one page. Another page pictures three models with specifications for each.

Westinghouse Refrigerators

To attract the attention of the dealer to the new Westinghouse "Quota Clincher" plan for teaching salesmen is a new folder recently mailed out with an attached order blank. The "Quota

THE CONDENSER

PAYMENT IN ADVANCE is required for advertising in this column. The following rates apply:

POSITIONS WANTED—Fifty words or less, one insertion \$2.00, additional words four cents each. Three insertions \$5.00, additional words ten cents each. **ALL OTHER CLASSIFICATIONS**—Fifty words or less, one insertion \$3.00, additional words six cents each. Three insertions \$8.00, additional words sixteen cents each.

REPLIES to advertisements with box numbers should be addressed to the box number in care of Electric Refrigeration News, 550 Maccabees Building, Detroit, Mich.

POSITIONS AVAILABLE

SEE display advertisement at bottom of this column.

POSITIONS WANTED

TESTING ENGINEER: Graduate Mechanical Engineer thoroughly experienced in testing household and commercial refrigeration equipment. Specially qualified to design, build, or operate calorimeters. Capable of starting test department for small company, or doing special test work for large concern. Also qualified for Sales Engineering position. Age 24. Good references. Box 457.

SALES EXECUTIVE: Seven years' experience in refrigeration has brought me in contact with every major electric utility operating and holding company in the United States. Also acquainted with electrical distributors and jobbers on national scale. Now employed by one of the largest electrical manufacturers. Reason for desiring change can better be explained through personal interview. Box 459.

REFRIGERATION engineer desires position with reputable concern. Experienced in design, development, manufacture and sales. Best references. Address Box 460.

TO MANUFACTURERS OF RETINED WIRE REFRIGERATOR TRAYS, the services of a practical man with manufacturing, accounting, and cost experience, time study, etc., who has processing method for Hot Tinning with positive timing control, and superior finish for Salt Spray Test Specifications. Want permanent connection with medial salary. Age 39. Box 461.

DEVELOPMENT Engineer with ten years' experience in the design, development, and testing of small compressors, float and expansion valves, evaporators for commercial and domestic applications, and accessories. Graduate of Massachusetts Institute of Technology. Available for position as research engineer or educational supervisor. Box 462.

PRODUCT MAN. Four years' factory and field experience on G. E. Available immediately. Nominal salary. Box 463.

EQUIPMENT FOR SALE

FOR SALE: 600 brand new condenser coils (same shape as those used for heating purposes) 2 sizes—13"x15" and 8"x18" together with fittings. Also 5 brand new Romeson compressors 1/2 hp. 45 brand new Romeson compressors 1 hp. Republic Iron and Metal Co., Erie, Pa.

WANT to buy 1/4-hp. Iroquois compressor units. Will pay cash. State size, quantity you have, and price. Munn & Cassaday Co., 910 Grand Ave., Des Moines, Iowa.

Trained Men Available

When in need of practical, trained shop mechanics, sales, installation or service men, patronize this FREE Placement Bureau. We have competent, trained graduates available in every locality, to meet your requirements. With or without experience. No charge to the men or to you. Write, phone or wire.

Utilities Engineering Institute

Placement Division
Dept. 932 404 No. Wells St., Chicago

Clincher plan consists of weekly inspirational talks; films giving connected sales talks, and instructions for conducting sales meetings for use by the dealer himself.

WE WANT TWO MEN

who have proven their ability to help distributors and dealers make more sales and more profits. They will be "pinch-hitters," used to put the punch back into spots that are faltering, and to maintain speed in organizations that are already doing a good job.

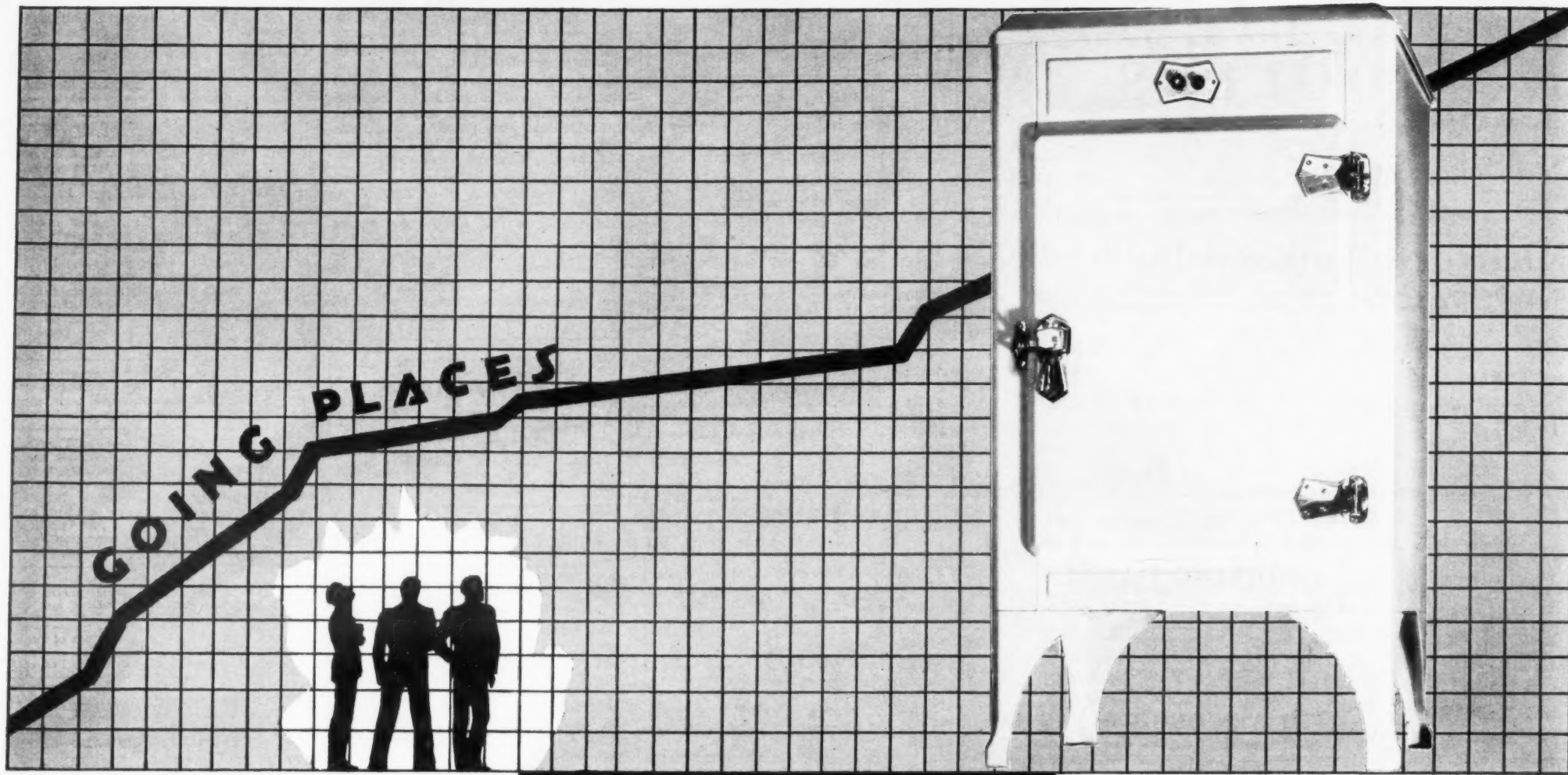
They must know thoroughly all the angles of specialty distribution and selling, and must be able to analyze the faults in any retail or wholesale operation, and cure them.

These two jobs call for 100% traveling, with one of the leaders in the electric appliance business, including refrigeration as a major activity. If you can really fill the job, write full details at once, and be sure to give all the information you think we need, including the salary requirements. Send photograph if convenient. Immediate appointments will be made for interviews, at convenient locations.

Address Box 458

Electric Refrigeration News

GIBSON SALES ARE CLIMBING EVERY DAY



The Public is Buying Gibsons. Sales to May 1st, 1932, are 420% Greater than Same Period in 1931.

The Gibson Factories are Running Full Blast Night and Day.

Gibson sales are climbing by leaps and bounds. Gibson owners are more than satisfied—they're enthusiastic! Every one is a Gibson booster.

Gibson is the "Talk of the Town." Wherever people gather. At parties, clubs or business, men and women alike are praising the Gibson—marveling at its beauty and outstanding value.

And they are *buying* the Gibson! The sales volume is tremendous and steadily increasing.

HERE'S WHY

THE MOST *Beautiful* REFRIGERATOR IN THE WORLD

EVERY CONVENIENCE

MONOUNIT POWER

50 YEARS EXCLUSIVE REFRIGERATION EXPERIENCE

GIBSON QUALITY

PRICED AS LOW AS

\$149⁵⁰

INSTALLED IN THE HOME

R. M. A. Convention
GIBSON AT CHICAGO
616 S. MICHIGAN AVENUE
(NEAR THE BLACKSTONE)
FULL LINE ON DISPLAY

The Gibson Electric is soundly built and fairly priced. It offers a generous dealer profit and the assurance of *keeping* that profit!

Gibson quality means years on end of trouble-free service, customer good will and prosperous retailing. Why not investigate the Gibson product and the Gibson franchise? Prove to your own satisfaction that Gibson *does* offer more—to both consumer and dealer.

The coupon will bring you complete details.

GIBSON ELECTRIC REFRIGERATOR CORPORATION

GREENVILLE, MICHIGAN

Export Sales Dept.
201 N. Wells St.,
Chicago, Ill., U.S.A.

Cable Address
"GIBSELCO" Chicago.
Bentley Code

IN CANADA

TRESTRAIL CORPORATION, Ltd.,
255 Spadina Ave.
Toronto

1100 Craig St.,
East Montreal
Montreal, Quebec

CLIP THIS COUPON

Gibson Electric Refrigerator Corp.,
Greenville, Michigan.

Without obligation please give me complete details on Gibson Dealer Franchise.

Name.....
Street.....
City..... State.....

ELECTRIC REFRIGERATION NEWS

Registered U. S. Patent Office

The business newspaper of the refrigeration industry

VOL. 6, No. 37, SERIAL NO. 165

Copyright, 1932, by
Business News Pub. Co.

DETROIT, MICHIGAN, MAY 18, 1932

Entered as second-class matter
Aug. 1, 1927, at Detroit, Mich.

THREE DOLLARS PER YEAR

PROGRAM LISTED
FOR SPRING ASRE
BOSTON MEETINGStevenson Announces
Speakers for June
Session

NEW YORK CITY—A. L. Stevenson, Jr. of General Electric Co., chairman in charge of the technical program, has announced speakers and subjects for the 19th spring meeting of the American Society of Refrigerating Engineers, to be held June 9, 10, and 11, in Cambridge, Mass., with headquarters at the Massachusetts Institute of Technology. Members attending the meeting will be able to secure dormitory quarters on the M. I. T. campus at a dollar a day, and those who bring their wives will be given special rates at the Copley-Plaza.

The technical program for the first day includes three papers, "Steam Ejector for Large Capacities," by D. K. Dean, Foster-Wheeler Co.; "Mercury Ejector Refrigerator," L. F. Whitney, Comstock & Westcott; and "Steam Ejector for Passenger Cars," R. W. Waterfall, Carrier Engineering Corp.

W. J. King, General Electric Co., will give a paper on "Review of Heat Transmission Developments, as the first speaker on June 10. Other subjects treated the same day will be: "Mechanism of Moisture Absorption in Cold Storage Insulation," A. A. Berestneff, Massachusetts Institute of Technology; and "Climate in the United States," O. W. Armpach.

Harry Sloan, of the Vilter Mfg. Co., will speak on "Economic Low Temperatures and the Rotary Compressors," on the closing day. "Lubricating," will be the subject discussed by B. L. Newkirk, General Electric Co., and "Solid CO₂ Refrigeration Control" will be treated by J. G. Bergdoll and A. W. Ruff, of York Ice Machinery Corp.

Entertainment for delegates has been planned by members of the Boston section of the A. S. R. E., with Everett L. Ryan in charge.

An all-day boat trip on Friday to Provincetown, with the morning session on the boat, luncheon and dinner at Provincetown Inn, and the afternoon free for delegates to view the historic sights of the old cape town, is one of the chief social events on the program.

Special boat trips from New York are being arranged to accommodate delegates wishing to come from that city.

DETROIT COMPANY MAKING
COMMERCE REFRIGERATOR

DETROIT—A line of three electric refrigerators under the trade name of "Commerce," is being marketed by the Commerce Pattern Foundry & Machine Co., 2211 Grand River Ave. This is the refrigerator mentioned in the story on Houghton & Dutton, page 1, merchandising section of this issue.

Among retail outlets for the new refrigerator in Detroit are the Detroit Edison Co. and Good Housekeeping Shop. Seeger cabinets are used for the "Commerce" refrigerator. The motor is of Wagner manufacture; expansion valve and evaporator are made by Fedders; controls are "Ranco" brand, and

CANADIAN FIRM TO MAKE
APEX APPLIANCES

CLEVELAND—C. G. Frantz, president of the Apex Electrical Mfg. Co., announces that arrangements have been made with the Robert Mitchell Co., Ltd., Montreal, Can., for the latter firm to manufacture and market Apex household appliances in Canada.

TRUPAR USING NEW BUILDING
FOR TESTING WORK

DAYTON—A new factory building having its own power plant and making its own odd frequency current has been taken over by Trupar Mfg. Co., here, for final assembling and testing of Mayflower electric refrigerators. The new building is a one-story brick structure, with slightly more than 21,000 sq. ft. in floor area.

Studner To Market
Kellogg, Jewett
Products

NEW YORK CITY—Studner Brothers, Inc., 245 Fifth Ave., has been appointed national merchandising organization for two new Jewett electric refrigerators and Kellogg compressors, according to M. M. Studner.

Jewett electric refrigerators, manufactured by the Jewett Refrigerator Co. of Buffalo, are made in two models, each with lacquer exterior and porcelain interior finish, and with three inches of "Jewett-approved insulation."

Jewett model JK-55 has 4.5 cu. ft. of food storage capacity; model JK-65 has 5.5-cu. ft. food storage capacity. The smaller has exterior dimensions as follows: 25½ in. wide, 21½ in. deep, 56½ in. high. It makes 56 ice cubes.

The larger is 22½ in. deep, 60½ in. high, and 28½ wide. It has an ice cube capacity of 84 cubes.

The Kellogg condensing unit, made by the Kellogg Mfg. Co., Rochester, is used in the Jewett cabinet. The refrigerant is methyl chloride. Other specifications on the compressor are given in the report directly below.

KELLOGG INTRODUCES
2 CONDENSING UNITS

ROCHESTER, N. Y.—Entrance into the refrigeration field of the Kellogg Mfg. Co., local manufacturer of air compressors, has just been made public by Joseph F. Weller, president, with the announcement of a belt-driven, close-coupled, compressor unit for household or small commercial refrigeration. Two compressors are offered, one for methyl chloride, the other for sulphur dioxide.

D. Roland Vanneman, consulting engineer of New York City, has assisted Kellogg engineers in the design of the equipment.

The machine for use with methyl chloride has a bore of 15/16 in., while the sulphur dioxide compressor has a 1½-in. bore. Both machines have a stroke of 13/16 in., and are operated at 500 r.p.m., according to the announcement.

By using a 7-in. flywheel, the designers have effected a close drive, and kept the length of the unit to 15 in. Its width is 13 in., and its height is 11½ in. A bellows type shaft seal is used.

Shut-off valves are attached to the

DETROIT A.S.R.E. TO HEAR
SWEENEY ON PRODUCTION

DETROIT—A. M. Sweeney, production manager of General Electric's refrigeration department will be the principal speaker at the next meeting of the Detroit section of the American Society of Refrigerating Engineers, at 8 o'clock Monday night, May 23, in the Statler Hotel.

The meeting will be open to all engineers interested in the subject of "Production Methods in the Refrigeration Industry," John Wyllie, secretary of the section, states.

Louis Ruthenburg, president of Copeland Products, Inc., who will preside over the discussion, announces that many of the precision production methods that have been specially developed for the manufacture of electric refrigerators will be brought out in the meeting.

A feature of the program will be a film picturization of a trip through the Detroit and Grand Rapids plants of Kelvinator Corp.

AUTO COMPRESSOR CO. BUILDS
CONDENSING UNITS

WILMINGTON, Ohio—The Auto Compressor Co. of this city is in production on a refrigerator compressor suitable for boxes of 4½ to 7½ cu. ft. capacity, according to announcement by John F. Goran, general manager.

The company furnishes its own pump and shut-off valves, and buys the rest of the parts necessary in assembling the compressor.

The product is being used by the Republic Tool Products Co., Dayton; Plymouth Refrigerator Co., Dayton; Quality Products Co., Dayton; Freeze King Refrigerator Corp., Chicago; Middleton Electric Co., Sedalia, Mo.; Hobart Cabinet Co., Troy, Ohio; and American Beauty Refrigerator Corp., Dayton.

DETAILS GIVEN ON
NEW ICE-O-MATIC
COMMERCIAL UNITModel F Has 1,400-lb.
Ice Melting Capacity
Per 24 Hours

BLOOMINGTON, Ill.—The Ice-O-Matic commercial line has just been extended with the addition of a new 1½-hp. model F, compressor unit, according to Stanley C. Bell, sales manager of the Ice-O-Matic division of the Williams Oil-O-Matic Heating Corp. Production of the new model is already under way.

The new machine produces 1,400 lbs. of ice melting effect per 24 hours of operation, according to A.S.R.E. ratings.

A feature of the new machine is a method of cooling the condenser by either water or air, the choice of cooling medium being made automatically according to pressures. Up to a high-side pressure of 110 lbs., the condenser is cooled by air; when the pressure exceeds this point, a water valve is opened to pass cooling water into the condenser.

The combination air and water cooling feature is particularly suited to installations such as ice cream freezers in which a heavy refrigeration load (as in freezing ice cream) is imposed on the system periodically, but for ice cream storage the load is lighter, Ice-O-Matic engineers claim. They also point out that it is economical of water in communities where the water rate is high.

Ice-O-Matic models H-A, H-W, and H-AW are new ½-hp. machines with increased capacities over their predecessors, the announcement states. Previously equipped with three legs, the new models now have four legs, and are now furnished complete with all electrical controls necessary for installation.

CARRIER ANNOUNCES NEW
PORTABLE ICE AIR COOLER

NEWARK—A compact, portable air cooling unit using melting ice as the cooling medium has just been developed by the Carrier Research Laboratories.

It is designed for use in offices and committee rooms, hotels, hospitals, small stores, beauty parlors and barber shops, tea rooms, and wherever the central type of heavy-duty air conditioning installation is too large for immediate requirements.

The new cooling device will lower the temperature of a room approximately 10° F. under ordinary summer conditions.

(Concluded on Page 3, Column 5)

Frigidaire Speeds
Production of
Conditioners

DAYTON—Full time production of air conditioners designed for homes, offices, apartments, retail establishments and other indoor spaces, was started last week by Frigidaire Corp., E. G. Biechler, president and general manager, announces.

"The air conditioners are being purchased by many types of customers," he said, "proving the market is receptive to unit type equipment. Interesting orders received call for immediate installations in leading restaurants and hotels in several of the nation's largest cities."

In addition to air conditioning units, Mr. Biechler said, Frigidaire's new FW-6300 3-hp. compressor, larger than any heretofore made by Frigidaire, is now in production. This compressor is for use both with air conditioning and industrial water cooling installations.

"Frigidaire distributors and dealers, generally, are finding that the buying public is ready for equipment that will provide comfortable and healthful indoor atmosphere," J. C. Chambers, sales manager of Frigidaire's newly formed air conditioning division, said.

"The air conditioners were seen by more than 5,000,000 persons who visited the General Motors National Exhibits in the 55 major cities of the nation early this month. In many instances, the

(Concluded on Page 20, Column 3)

LARGE MILK COOLER
IS DESIGNED BY ESCO

WEST CHESTER, Pa.—The Esco Cabinet Co. has announced the construction of a new milk cooling and storage cabinet with a capacity of six 40-qt. milk cans.

The new model has been named the Model J-6 and is the largest model in the Esco Cabinet "J" line, a low-priced series.

The interior and exterior of the new model is of rust-resisting galvanized Armco Ingot iron. Outside dimensions of the milk cooler are 57 in. long, 41½ in. wide, and 32½ in. deep; it weighs approximately 590 lbs.

Cabinet cooling is accomplished through patented Esco cooling coils, which are seamless copper tubing tinned on the outside.

Temperature of the water in which the cans rest is controlled by an automatic thermostat. This special Mercoid control has a 21-in. bulb with positive action for operation at low temperatures.

Insulation is 3 in. throughout the cabinet proper. All insulation is wrapped

(Concluded on Page 7, Column 4)

GIBSON DEVELOPS
3-TEMPERATURE
14-CU. FT. MODELWater Cooler, Separate
Food Compartments
Are Featured

By John T. Schaefer

GREENVILLE, Mich.—Two separate and insulated compartments have been incorporated into the new 14-cu. ft. De Luxe refrigerator which the Gibson Electric Refrigerator Corp. has just announced. The new model will be displayed at the R. M. A. show in Chicago next week.

Other features of the new model are a water cooler (which may be connected to city water mains as a pressure cooler, or used as a bottle type using a bottle on top of the cabinet), ice cube capacity for producing 210 cubes in one freezing, interior electric lights, a low-temperature chamber, and an "air conditioning" feature of the normal temperature compartment.

The new refrigerator, as yet without a model number, is finished inside and out in porcelain, offers 20 sq. ft. of shelf area, has 14.7 cu. ft. of gross food capacity and 12.5 cu. ft. net, with measurements made according to Nema ratings, according to R. T. Smith, chief engineer. It stands 67½ in. high, 43½ in. wide, and 29½ in. deep.

A standard Gibson compressor unit powered by a 1½-hp. Delco motor, is used to refrigerate each compartment, the machines operating independently of each other. The cabinet is insulated with 4 in. of Balsam Wool fibre in the sides, walls, back, and door; 4½ in. of the same insulant in the bottom, and 3 in. between the two compartments. The small door is 42 in. high and 11½ in. wide, while the large door is 42 by 20½ in.

As shown in the picture on this page, the low-temperature compartment is at the left. Temperatures from 26 to 35° F. are maintained in this section—par-

(Concluded on Page 3, Column 1)

FERRO TO GIVE COURSE
IN PORCELAIN, JUNE 20

CLEVELAND—A week's course in porcelain enameling will be offered by the Ferro Enamel Corp. beginning Monday, June 20, according to announcement by R. C. Harmon of that firm.

Lessons will be based on the new Ferro textbook, "Advanced Technique of Porcelain Enameling," issued late in February, and all students are asked to study the book carefully before the school begins.

Classes will be held in the B. F. Keith building in Cleveland; tuition is \$25. Traveling expenses and living costs will be extra.

J. E. Hansen, research engineer of Ferro Enamel Corp., will have charge of classes. Class room instruction will be supplemented by lectures given by representatives of various porcelain enameling plants. Porcelain enameling executives, shop foremen and superintendents, operators, and supply men are expected to attend.

Program for the first day will include discussions on the metal base for enameling, sandblasting and pickling, mill room practice, and mill additions.

On Tuesday, the class will hear talks on: application of enamel, drying and brushing, and burning. The following day, the morning will be given over to a discussion of inspection, and graining and decorative finishes, and a talk on shop troubles will occupy the afternoon session.

Thursday morning, a symposium on

(Concluded on Page 7, Column 4)

IMPERIAL BRASS TO FURNISH
EQUIPMENT FOR AIRSHIP

CHICAGO—The Imperial Brass Mfg. Co. has been awarded the contract for the sanitary equipment to be used on the Macon ZRS-5, sister ship of the Akron.

Imperial Brass equipment is also used in the Akron—known as the world's largest dirigible. All fixtures have been designed specially for aeronautical installations where compactness and light weight are of primary importance.

Three-Way Refrigeration



Three temperatures, water cooling, and a food compartment with controlled humidity are featured in Gibson's new 14-cu. ft. DeLuxe model.

Specifications of Household Electric Refrigerators

Copeland

COPELAND PRODUCTS, INC.
332 Cass Ave., Mt. Clemens, Mich.

Model or Catalog No.	A-402	A-442	P-442	A-562	A-522	P-522	A-612	P-612	A-772	P-772	D-682	E-682	D-932	E-932	D-932-2	E-932-2	E-1152
CABINET SPECIFICATIONS																	
Overall dimensions, including hardware	49 1/2	52 1/2	52 1/2	58 1/2	52 1/2	52 1/2	56 1/2	56 1/2	62 1/2	62 1/2	59 1/2	59 1/2	66 1/2	66 1/2	66 1/2	66 1/2	66 1/2
Height (inches)	24 1/2	24 1/2	24 1/2	24 1/2	24 1/2	24 1/2	24 1/2	24 1/2	24 1/2	24 1/2	24 1/2	24 1/2	24 1/2	24 1/2	24 1/2	24 1/2	24 1/2
Width (inches)	21 1/2	21 1/2	21 1/2	21 1/2	21 1/2	21 1/2	21 1/2	21 1/2	21 1/2	21 1/2	21 1/2	21 1/2	21 1/2	21 1/2	21 1/2	21 1/2	21 1/2
Depth (inches)	21 1/2	21 1/2	21 1/2	21 1/2	21 1/2	21 1/2	21 1/2	21 1/2	21 1/2	21 1/2	21 1/2	21 1/2	21 1/2	21 1/2	21 1/2	21 1/2	21 1/2
Thickness of insulation	2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2
Top of cabinet (inches)	1 1/2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Sides of cabinet (inches)	1 1/2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Bottom of cabinet (inches)	1 1/2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Inside dimensions of cabinet liner	24 1/2	25 1/2	25 1/2	31 1/2	25 1/2	25 1/2	25 1/2	25 1/2	31 1/2	31 1/2	28 1/2	28 1/2	33 1/2	33 1/2	33 1/2	33 1/2	33 1/2
Height (inches)	20 1/2	19 1/2	19 1/2	19 1/2	21 1/2	21 1/2	21 1/2	21 1/2	21 1/2	21 1/2	21 1/2	21 1/2	21 1/2	21 1/2	21 1/2	21 1/2	21 1/2
Width (inches)	16	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
Depth (inches)	20	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
Thickness of exterior metal (gauge)	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
Thickness of interior metal (gauge)	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
Number of refrigerator doors	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
STORAGE CAPACITY																	
Gross food storage capacity (cu. ft.)	4.58	5.12	5.12	6.33	6.25	6.25	7.46	7.46	9.20	9.20	8.55	8.55	10.92	10.92	10.92	10.92	17.78
Net food storage (cu. ft.) (Nema rating)	4.00	4.40	4.40	5.61	5.21	5.21	6.17	6.17	7.68	7.68	6.83	6.83	9.36	9.36	9.36	9.36	15.52
Number of shelves	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Total shelf area (sq. ft.) (Nema rating)	9.08	9.08	9.08	9.08	11.15	11.15	12.75	12.75	15.61	15.61	12.75	12.75	15.61	15.61	15.61	15.61	25.91
Greatest distance between any two shelves	6 1/2	6 1/2	6 1/2	10 1/2	6 1/2	6 1/2	6 1/2	6 1/2	6 1/2	6 1/2	6 1/2	6 1/2	6 1/2	6 1/2	6 1/2	6 1/2	11.0
Shortest distance between any two shelves	5 1/4	5 1/4	5 1/4	5 1/4	5 1/4	5 1/4	5 1/4	5 1/4	5 1/4	5 1/4	5 1/4	5 1/4	5 1/4	5 1/4	5 1/4	5 1/4	5 1/4
ICE CUBE TRAYS																	
Number of ice cube trays	2	2	2	2	2	2	3	3	4	4	3	3	4	4	4	4	4
Inside dimensions of trays (inches)	9 3/4	9 3/4	9 3/4	9 3/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4
Length (at top of tray)	3 3/4	3 3/4	3 3/4	3 3/4	3 3/4	3 3/4	3 3/4	3 3/4	3 3/4	3 3/4	3 3/4	3 3/4	3 3/4	3 3/4	3 3/4	3 3/4	3 3/4
Width (at top of tray)	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4
Depth (shallow tray)	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2
Depth (deep tray)	63	63	63	63	81	81	108	108	162	162	108	108	162	162	162	162	106
Weight of ice cubes produced (lbs.)	4.05	4.05	4.05	4.05	5.21	5.21	6.95	6.95	10.6	10.6	6.95	6.95	10.6	10.6	10.6	10.6	10.6
COMPRESSOR SPECIFICATIONS																	
Compressor capacity (lbs.) (ASRE rating)	99	99	99	160	160	160	160	160	160	160	160	160	160	230	230	230	230
Motor size (hp.)	1-8	1-8	1-8	1-8	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-4	1-4	1-4	1-4
Quantity of lubricant in system	1/2 pt.	1/2 pt.	1/2 pt.	1/2 pt.	1/2 pt.	1/2 pt.	1/2 pt.	1/2 pt.	1/2 pt.	1/2 pt.	1/2 pt.	1/2 pt.	1/2 pt.	1 1/2 pt.	1 1/2 pt.	1 1/2 pt.	1 1/2 pt.
WEIGHT																	
Net weight of complete refrigerator (lbs.)	242	265	288	279	311	333	353	363	391	410	477	497	544	551	571	578	715
Total shipping weight (lbs.)	290	320	343	337	371	393	423	433	465	484	587	607	665	672	692	699	898

CABINET MATERIALS	
Make of cabinet	A-402—Truscon; D & E models—Belting Hall; all others—Leonard
Material used for exterior	Truscon—steel; all others—wood
Make of exterior metal	Truscon—steel; all others—enamel steel
Material used for frame	Tinned
Make of interior metal	Belting Hall—Armco; all others—enamel steel
Finish of shelves	Tinned
INSULATION	
Make of insulation	D & E models—Dry-Zero; all others—Cellboard & Celotex
Nature of insulating material	Vegetable
Bulk or formed slabs	Formed slabs
FINISH	
Cabinet finish (exterior)	A models—lacquer; others—porcelain
Make of exterior finish	White
Colors offered as standard	None except tops of D & E models
Colors offered on special order	Porcelain
Cabinet finish (interior)	Porcelain
Make of interior finish	Porcelain
HARDWARE	
Make of hardware	A-402—Grand Rapids Brass; D & E models—Doehler; all others—Winters & Crampton
Process of manufacture	all others—stamped
Basic metal of hardware	Grand Rapids Brass & Winters & Crampton—brass
Finish of hardware	Chromium

DOORS	
Material used for breaker strip	A-402, A-442, P-442 & A-562—wood; all others—rubber
Material used for gasket	D & E models—rubber cloth; all others—rubber
Make or brand of gasket	Backstay Welt—all others—Miller
EVAPORATOR	
Make of evaporator	Copeland
Evaporator construction	Tubular
Material used for evaporator	Copper
Type of refrigerant control	Expansion valve
Make of expansion valve	Detroit Lubricator
Make of brine tank	A-402, A-442, P-442 & A-562—none; all others—Copeland
Solution used for brine	Glycerine & water
Type and make of trays	A-402, A-442, P-442 & A-562—aluminum; all others—aluminum & rubber
SPECIAL FEATURES	
Interior light except A-402, A-442, P-442 & A-562	Slide basket except A-402
Vegetable tray—E models	Telescoping shelf except A-402
Water cooling tank—D & E models	
COMPRESSOR	
Make of compressor	Copeland
Type of system	Conventional
Type of compressor	Reciprocating
Compressor drive	Belt
Type and make of shaft seal	Copeland metallic
Location of compressor	Below

CONDENSER	
Make of condenser	Bush
Fan or natural draft cooling	Fan
Type of condenser	Finned tube
REFRIGERANT	
Refrigerant used	A-402, A-442, P-442, A-562, D-932-2, E-932-2 & E-1552—Methyl Chloride; all others—Iso-Butane
Trade name	Methyl chloride—CH ₂ Cl
Chemical formula	Iso-Butane—C ₄ H ₁₀
LUBRICATION	
Make of compressor lubricant	Copeland special
When should motor be oiled	Annually
MOTOR	
Make of motor	Delco
Type of motor	Repulsion-Induction
Method of starting	Direct
How adapted to odd frequency	Change motor
What additional cost is entailed	None
How adapted to direct current	Change motor
What additional cost is entailed	None
CONTROL	
Make of control	Bishop & Babcock
Type of control	Temperature
Temperature regulation method	Manual regulator
Make of overload cut-out	D & E models—Delco; all others—none
How is defrosting accomplished	Shut down unit
POLICY	
Who determines retail price	Distributor
Guarantee period on cabinet	Factory to distributor—15 months
Guarantee period on system	Factory to distributor—15 months
By whom serviced	Dealer & distributor
Are replacement parts sold to independent service companies	No

Kelvinator

KELVINATOR CORP.
14250 Plymouth Rd., Detroit

Model or Catalog No.	D-22	D-14	D-11	D-8	D-6	S-4	S-5	S-7	S-9	PK-7	PK-6	PK-5	PK-4	K-7	K-6	K-5	K-4
CABINET SPECIFICATIONS																	
Overall dimensions, including hardware	70 1/4	70 1/4	68 3/8	66 1/4	59 1/4	52 1/4	58	58 3/4	63 1/4	57	56 1/4	51 1/2	49 3/4	57	56 1/4	51 1/2	49 3/4
Height (inches).....	27 1/2	27 1/2	27 1/2	27 1/2	27 1/2	27 1/2	27 1/2	27 1/2	27 1/2	27 1/2	27 1/2	27 1/2	27 1/2	27 1/2	27 1/2	27 1/2	27 1/2
Width (inches).....	24 1/2	24 1/2	24 1/2	24 1/2	24 1/2	24 1/2	24 1/2	24 1/2	24 1/2	24 1/2	24 1/2	24 1/2	24 1/2	24 1/2	24 1/2	24 1/2	24 1/2
Depth (inches).....	24 1/2	24 1/2	24 1/2	24 1/2	24 1/2	24 1/2	24 1/2	24 1/2	24 1/2	24 1/2	24 1/2	24 1/2	24 1/2	24 1/2	24 1/2	24 1/2	24 1/2
Inside dimensions of cabinet liner	41 3/8	41 3/8	39 3/8	37 3/8	30 3/8	27 3/8	32 3/8	32 3/8	34 3/8	30	29 3/8	24 3/8	24 3/8	30	29 3/8	24 3/8	24 3/8
Height (inches).....	18 3/8	18 3/8	18 3/8	18 3/8	18 3/8	15 3/8	15 3/8	18 3/8	18 3/8	18 3/8	18 3/8	18 3/8	18 3/8	18 3/8	18 3/8	18 3/8	18 3/8
Width (inches).....	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
Depth (inches).....	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
Thickness of exterior metal (gauge).....	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
Thickness of interior metal (gauge).....	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
Number of refrigerator doors.....	2	2	2	2	2	1	1	1	2	1	1	1	1	1	1	1	1
STORAGE CAPACITY																	
Gross food storage capacity (cu. ft.).....	22.27	14.55	11.68	8.2	6.38	4.3	5.14	7.04	8.82	6.9	5.94	4.94	4.0	6.9	5.94	4.94	4.0
Net food storage capacity (cu. ft.) (Nema rating).....	10	5	4	3	3	3	4	4	4	4	4	4	3	4	4	4	3
Number of shelves.....	41.84	26.36	22.73	16.3	12.16	8.91	11.05	14.69	16.57	14.2	12.16	10.34	8.21	14.2	12.16	10.34	8.21
Greatest distance between any two shelves.....	11 1/2	11 1/2	11 1/2	11 1/2	10 1/2	12 1/2	12 1/2	11	10 1/2	12 1/2	12 1/2	12 1/2	12 1/2	12 1/2	12 1/2	12 1/2	12 1/2
Shortest distance between any two shelves.....	5 1/8	5 1/8	5 1/8	5 1/8	5 1/8	4 7/8	4 7/8	4 7/8	6	5 3/8	5	5 1/2	5 1/2	5 3/8	5	5 1/2	5 3/8
ICE CUBE TRAYS																	
Number of ice cube trays.....	9	7	7	5	4	3	3	4	4	3	3	3	2	3	3	3	2
Inside dimensions of trays (inches)	13 1/2	13 1/2	13 1/2	13 1/2	13 1/2	9 1/2	9 1/2	13 1/2	13 1/2	13 1/2	13 1/2	13 1/2	13 1/2	13 1/2	13 1/2	13 1/2	13 1/2
Length (at top of tray).....	5 1/2	5 1/2	5 1/2	5 1/2	5 1/2	5 1/2	5 1/2	5 1/2	5 1/2	5 1/2	5 1/2	5 1/2	5 1/2	5 1/2	5 1/2	5 1/2	5 1/2
Width (at top of tray).....	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2
Depth (single).....	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4
Depth (double).....	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Depth (triple).....	24 3/4	18 1/2	18 1/2	13 1/2	10 1/2	42	42	108	108	108	64	63	42	108	84	63	42
Number of cubes produced at one freezing.....	34.0	28.5	28.5	23.0	20.25	8.0	8.0	16.5	16.5	11.0	8.8	5.1	3.4	11.0	6.8	5.1	3.4
Weight of ice cubes produced (lbs.).....																	
COMPRESSOR SPECIFICATIONS																	
Compressor capacity (lbs.) (ASRE rating).....	200	200	200	200	112	112	200	200	164	112	92	92	164	112	92	92	164
Motor size (hp.).....	1-3	1-3	1-4	1-4	1-6	1-6	1-6	1-4	1-4	1-5	1-6	1-10	1-10	1-5	1-6	1-10	1-10
WEIGHT																	
Net weight of complete refrigerator (lbs.).....	1405	1075	1000	690	600	352	375	525	640	496	452	411	375	463	424	380	340
Total shipping weight (lbs.).....																	
PRICE																	
Retail price, without installation (before additions for freight).....	\$730.00	\$600.00	\$515.00	\$425.00	\$381.00	\$219.00	\$247.00	\$308.00	\$375.00	\$287.50	\$254.00	\$226.50	\$199.50	\$233.00	\$199.50	\$177.00	\$149.50
CABINET MATERIALS																	
Make of cabinet.....	Kelvinator	Kelvinator	Kelvinator	Kelvinator	Kelvinator	Kelvinator	Kelvinator	Kelvinator	Kelvinator	Kelvinator	Kelvinator	Kelvinator	Kelvinator	Kelvinator	Kelvinator	Kelvinator	Kelvinator
Material used for exterior.....	Metal	Metal	Metal	Metal	Metal	Metal	Metal	Metal	Metal	Metal	Metal	Metal	Metal	Metal	Metal	Metal	Metal
Make of exterior metal.....	Enamel	Enamel	Enamel	Enamel	Enamel	Enamel	Enamel	Enamel	Enamel	Enamel	Enamel	Enamel	Enamel	Enamel	Enamel	Enamel	Enamel
Material used for frame.....	Wood	Wood	Wood	Wood	Wood	Wood	Wood	Wood	Wood	Wood	Wood	Wood	Wood	Wood	Wood	Wood	Wood
Make of interior metal.....	Enamel	Enamel	Enamel	Enamel	Enamel	Enamel	Enamel	Enamel	Enamel	Enamel	Enamel	Enamel	Enamel	Enamel	Enamel	Enamel	Enamel
Finish of shelves.....	Tinned	Tinned	Tinned	Tinned	Tinned	Tinned	Tinned	Tinned	Tinned	Tinned	Tinned	Tinned	Tinned	Tinned	Tinned	Tinned	Tinned
INSULATION																	
Make of insulation.....	Kelvatex	Kelvatex	Kelvatex	Kelvatex	Kelvatex	Kelvatex	Kelvatex	Kelvatex	Kelvatex	Kelvatex	Kelvatex	Kelvatex	Kelvatex	Kelvatex	Kelvatex	Kelvatex	Kelvatex
Nature of insulating material.....	Vegetable	Vegetable	Vegetable	Vegetable	Vegetable	Vegetable	Vegetable	Vegetable	Vegetable	Vegetable	Vegetable	Vegetable	Vegetable	Vegetable	Vegetable	Vegetable	Vegetable
Bulk or formed slabs.....	Formed slabs	Formed slabs	Formed slabs	Formed slabs	Formed slabs	Formed slabs	Formed slabs	Formed slabs	Formed slabs	Formed slabs	Formed slabs	Formed slabs	Formed slabs	Formed slabs	Formed slabs	Formed slabs	Formed slabs
FINISH																	
Cabinet finish (exterior).....	K models—lacquer; all others—porcelain	K models—lacquer; all others—porcelain	K models—lacquer; all others—porcelain	K models—lacquer; all others—porcelain	K models—lacquer; all others—porcelain	K models—lacquer; all others—porcelain	K models—lacquer; all others—porcelain	K models—lacquer; all others—porcelain	K models—lacquer; all others—porcelain	K models—lacquer; all others—porcelain	K models—lacquer; all others—porcelain	K models—lacquer; all others—porcelain	K models—lacquer; all others—porcelain	K models—lacquer; all others—porcelain	K models—lacquer; all others—porcelain	K models—lacquer; all others—porcelain	K models—lacquer; all others—porcelain
Colors offered as standard.....	D models—white; gray trim; all others—white	D models—white; gray trim; all others—white	D models—white; gray trim; all others—white	D models—white; gray trim; all others—white	D models—white; gray trim; all others—white	D models—white; gray trim; all others—white	D models—white; gray trim; all others—white	D models—white; gray trim; all others—white	D models—white; gray trim; all others—white	D models—white; gray trim; all others—white	D models—white; gray trim; all others—white	D models—white; gray trim; all others—white	D models—white; gray trim; all others—white	D models—white; gray trim; all others—white	D models—white; gray trim; all others—white	D models—white; gray trim; all others—white	D models—white; gray trim; all others—white
Cabinet finish (interior).....	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White
Make of interior finish.....	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White
HARDWARE																	
Make of hardware.....	Die cast	Die cast	Die cast	Die cast	Die cast	Die cast	Die cast	Die cast	Die cast	Die cast	Die cast	Die cast	Die cast	Die cast	Die cast	Die cast	Die cast
Process of manufacture.....	Chromium	Chromium	Chromium	Chromium	Chromium	Chromium	Chromium	Chromium	Chromium	Chromium	Chromium	Chromium	Chromium	Chromium	Chromium	Chromium	Chromium
Finish of hardware.....	Chromium	Chromium	Chromium	Chromium	Chromium	Chromium	Chromium	Chromium	Chromium	Chromium	Chromium	Chromium	Chromium	Chromium	Chromium	Chromium	Chromium
DOORS																	
Material used for breaker strip.....	Rubber	Rubber	Rubber	Rubber	Rubber	Rubber	Rubber	Rubber	Rubber	Rubber	Rubber	Rubber	Rubber	Rubber	Rubber	Rubber	Rubber
Material used for gasket.....	Rubber	Rubber	Rubber	Rubber	Rubber	Rubber	Rubber	Rubber	Rubber	Rubber	Rubber	Rubber	Rubber	Rubber	Rubber	Rubber	Rubber
COMPRESSOR																	
Make of compressor.....	Kelvinator	Kelvinator	Kelvinator	Kelvinator	Kelvinator	Kelvinator	Kelvinator	Kelvinator	Kelvinator	Kelvinator	Kelvinator	Kelvinator	Kelvinator	Kelvinator	Kelvinator	Kelvinator	Kelvinator
Type of system.....	Conventional	Conventional	Conventional	Conventional	Conventional	Conventional	Conventional	Conventional	Conventional	Conventional	Conventional	Conventional	Conventional	Conventional	Conventional	Conventional	Conventional
Type of compressor.....	Reciprocating	Reciprocating	Reciprocating	Reciprocating	Reciprocating	Reciprocating	Reciprocating	Reciprocating	Reciprocating	Reciprocating	Reciprocating	Reciprocating	Reciprocating	Reciprocating	Reciprocating	Reciprocating	Reciprocating
Type and make of drive.....	Belt	Belt	Belt	Belt	Belt	Belt	Belt	Belt	Belt	Belt	Belt	Belt	Belt	Belt	Belt	Belt	Belt
Type and make of shaft seal.....	Bellevue	Bellevue	Bellevue	Bellevue	Bellevue	Bellevue	Bellevue	Bellevue	Bellevue	Bellevue	Bellevue	Bellevue	Bellevue	Bellevue	Bellevue	Bellevue	Bellevue
Location of compressor.....	Below	Below	Below	Below	Below	Below	Below	Below	Below	Below	Below	Below	Below	Below	Below	Below	Below
CONDENSER																	
Make of condenser.....	Kelvinator	Kelvinator	Kelvinator	Kelvinator	Kelvinator	Kelvinator	Kelvinator	Kelvinator	Kelvinator	Kelvinator	Kelvinator	Kelvinator	Kelvinator	Kelvinator	Kelvinator	Kelvinator	Kelvinator
Fan or natural draft cooling.....	Fan	Fan	Fan	Fan	Fan	Fan	Fan	Fan	Fan	Fan	Fan	Fan	Fan	Fan	Fan	Fan	Fan
Type of condenser.....	Finned tube	Finned tube	Finned tube	Finned tube	Finned tube	Finned tube	Finned tube	Finned tube	Finned tube	Finned tube	Finned tube	Finned tube	Finned tube	Finned tube	Finned tube	Finned tube	Finned tube
REFRIGERANT																	
Refrigerant used.....	Sulphur Dioxide	Sulphur Dioxide	Sulphur Dioxide	Sulphur Dioxide	Sulphur Dioxide	Sulphur Dioxide	Sulphur Dioxide	Sulphur Dioxide	Sulphur Dioxide	Sulphur Dioxide	Sulphur Dioxide	Sulphur Dioxide	Sulphur Dioxide	Sulphur Dioxide	Sulphur Dioxide	Sulphur Dioxide	Sulphur Dioxide
Trade name.....	SO ₂	SO ₂	SO ₂	SO ₂	SO ₂	SO ₂	SO ₂	SO ₂	SO ₂	SO ₂	SO ₂	SO ₂	SO ₂	SO ₂	SO ₂	SO ₂	SO ₂
Chemical formula.....	SO ₂	SO ₂	SO ₂	SO ₂	SO ₂	SO ₂	SO ₂	SO ₂	SO ₂	SO ₂	SO ₂	SO ₂	SO ₂	SO ₂	SO ₂	SO ₂	SO ₂
LUBRICATION																	
Make of compressor lubricant.....	Annually	Annually	Annually	Annually	Annually	Annually	Annually	Annually	Annually	Annually	Annually	Annually	Annually	Annually	Annually	Annually	Annually
When should motor be oiled.....	Annually	Annually	Annually	Annually	Annually	Annually	Annually	Annually	Annually	Annually	Annually	Annually	Annually	Annually	Annually	Annually	Annually
MOTOR																	
Make of motor.....	Direct	Direct	Direct	Direct	Direct	Direct	Direct	Direct	Direct	Direct	Direct	Direct	Direct	Direct	Direct	Direct	Direct
Type of motor.....	Direct	Direct	Direct	Direct	Direct	Direct	Direct	Direct	Direct	Direct	Direct	Direct	Direct	Direct	Direct	Direct	Direct
Method of starting.....	Change motor	Change motor	Change motor	Change motor	Change motor	Change motor	Change motor	Change motor	Change motor	Change motor	Change motor	Change motor	Change motor	Change motor	Change motor	Change motor	Change motor
How adapted to odd frequency.....	Change motor	Change motor	Change motor	Change motor	Change motor	Change motor	Change motor	Change motor	Change motor	Change motor	Change motor	Change motor	Change motor	Change motor	Change motor	Change motor	Change motor
How adapted to direct current.....	Change motor	Change motor	Change motor	Change motor	Change motor	Change motor	Change motor	Change motor	Change motor	Change motor	Change motor	Change motor	Change motor	Change motor	Change motor	Change motor	Change motor
CONTROL																	
Make of control.....	Kelvinator	Kelvinator	Kelvinator	Kelvinator	Kelvinator	Kelvinator	Kelvinator	Kelvinator	Kelvinator	Kelvinator	Kelvinator	Kelvinator	Kelvinator	Kelvinator	Kelvinator	Kelvinator	Kelvinator
Type of control.....	Temperature	Temperature	Temperature	Temperature	Temperature	Temperature	Temperature	Temperature	Temperature	Temperature	Temperature	Temperature	Temperature	Temperature	Temperature	Temperature	Temperature
How is defrosting accomplished.....	Shut down unit	Shut down unit	Shut down unit	Shut down unit	Shut down unit	Shut down unit	Shut down unit	Shut down unit	Shut down unit	Shut down unit	Shut down unit	Shut down unit	Shut down unit	Shut down unit	Shut down unit	Shut down unit	Shut down unit
POLICY																	
Guarantee period on cabinet.....	Three years	Three years	Three years	Three years	Three years	Three years	Three years	Three years	Three years	Three years	Three years	Three years	Three years	Three years	Three years	Three years	Three years
Guarantee period on system.....	Three years	Three years	Three years	Three years	Three years	Three years	Three years	Three years	Three years	Three years	Three years	Three years	Three years	Three years	Three years	Three years	Three years
Are replacement parts sold to.....	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No

Water Cooler, Two Temperatures Feature Gibson 14-ft. Model

(Concluded from Page 1, Column 5)
ticularly for frozen foods, bottle storage, etc., Mr. Smith points out. Six single and two double trays provide the 210 ice cubes.

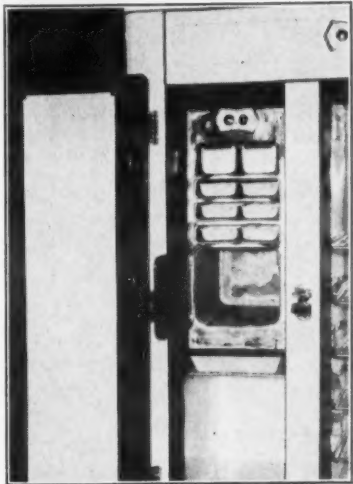
Directly under the ice cube trays is the low-temperature chamber which holds temperatures from 5 to 8° F., and which Mr. Smith claims is suited to home ice cream manufacture and storage, the production or storage of additional ice cubes, and frozen foods. A brine tank in this compartment provides cold hold-over.

The normal temperature compart-

ments, at the same time preventing frost accumulation.

Like the low-temperature compartment, the normal temperature compartment is regulated by an eight-point Tagliabue control, but the low-temperature compartment has the control dial inside the refrigerator on the evaporator.

Low Temperatures



Temperatures down to 5° F. are produced in this chamber.

while the normal temperature compartment has its control outside.

Tinned sliding shelves and 11-in. legs are used as standard.

About 1½ qts. of water may be drawn from the water cooling tank at all times from the button-type faucet on the front of the evaporator. Provision is made to connect the water coil directly to a city water main, otherwise a standard bottle of purified water may be placed in the receptacle in the top of the cabinet, Mr. Smith explains.

Both refrigerating units are removable, and are serviced on the replacement basis like other Gibson models, Mr. Smith states.

Water Cooler



City mains or a standard water bottle atop the refrigerator supply the water cooler.

ment is cooled by a finned tubing type of evaporator with sufficient surface to refrigerate the cabinet with an evaporator running at about 34° F. By keeping the evaporator temperature above freezing the air is "conditioned" to a fairly high humidity, Mr. Smith main-

Kelvinator Installation Tests Storage Batteries At -35° in Plant of Ford Motor Co.

By John T. Schaefer
solution is thicker and penetrates the lead plates less. Accordingly, the chemical reaction is slower.

Lined with 4 in. of corkboard in each side, and 6 in. of corkboard in the bottom, the cabinet will hold 10 standard Ford batteries at a temperature of -35° F. The machine is a Kelvinator model WF-45, water cooled and using methyl chloride. An alcohol tank surrounding the battery compartment affords a cold hold-over effect.

Two doors to cabinet

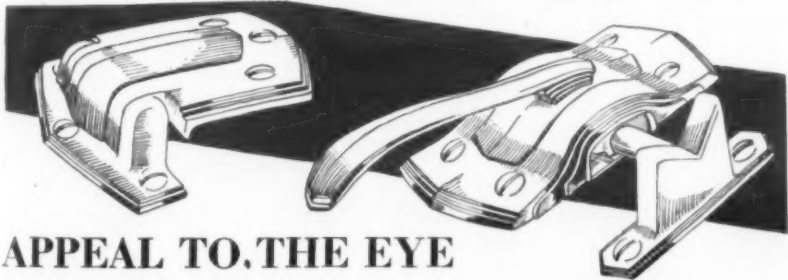
Storage Battery Action

1. The gas bubbles of hydrogen and oxygen released in the chemical action of a battery will cling to the surface of the lead plates at low temperatures, requiring a higher charging voltage to overcome the electrical resistance of the bubbles. Since the charging voltage of the generator is impressed on the lighting system as well as on the battery, it must not be high enough to burn out bulbs. For some batteries the charging voltage mounts to 12 volts; Ford specifications require that it be less than 9 volts.

2. A storage battery's capacity is reduced by low temperatures because the

Two separate top doors provide entrance to the cabinet, and each door has a triple-glass window through which a thermometer can be read. The exterior of the cabinet is finished in Monel. Overall cabinet dimensions are 5 ft. 6 in. long; 2 ft. 8 in. high, and 2 ft. 1 in. wide.

Rubber and molded bakelite parts such as are used for Ford steering wheels and distributor heads also present a problem for low-temperature testing in the same cabinet, because low temperatures can cause cracking of these parts due to the difference in expansion coefficients of the molded material and the metal which forms its base.



APPEAL TO THE EYE

Most electric refrigerators, like most automobiles, are mechanically good. Clean, attractive design is enhanced by attractive hardware and will command the attention of the buyer, particularly women who are your buyers and experts of good taste.

Creative Designers and Manufacturers of
Automobile and Refrigerator Hardware

THE DEVEREAUX CORPORATION
DETROIT

KELLOGG INTRODUCES 2 CONDENSING UNITS

(Concluded from Page 1, Column 2)
side of the cylinder to facilitate removal of the cylinder head and valve plate, Mr. Weller points out. Both suction and discharge valves have been incorporated in the same valve plate, with the suction valve on the under side of the valve plate, and the discharge valve on top.

The evaporated refrigerant is drawn into the side of the compressor through a passageway which connects to the crankcase for oil return, and also to the center of the valve plate. A horizontal passage in the valve plate conveys the gas to the center of the suction valve, Mr. Weller explains.

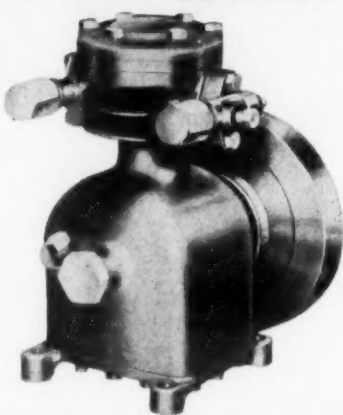
Suction and discharge valves consist of flat discs of spring steel with four narrow "ears." A cage affair fitting over the valve plate holds the valve on its seat by means of tension on the four ears. The designing engineers claim quiet operation by virtue of the fact that tension on the ears of the valve, and the height of the valve seat reeding are controlled by the thickness of the valves.

A 1/6-hp. motor has been adopted as standard equipment, and is mounted on a belt hinge which acts as a belt tightener.

The larger bore compressor (1½-in.) can be used as a ¼-hp. methyl chloride machine for small commercial installations, the designers state.

Mr. Weller states that calorimetric tests indicate that with methyl chloride and a 1/6-hp. motor, the unit will develop 120 lbs. of ice melting effect per day at 14 lbs. suction pressure, or it will produce 85 lbs. i.m.e. per day under A.S.R.E. standard conditions. Its volumetric efficiency is 68 per cent, he declares.

New Kellogg Machine



Kellogg Mfg. Co. announces this small compressor unit (see story starting on page 1).

JOINT CHEMICAL MEETING STUDIES STAINLESS STEEL

NEW YORK CITY—A paper by Edgar C. Bain of the United States Steel Corp. on "Some Fundamental Characteristics of Stainless Steels" was a feature of a joint meeting of the Society of Chemical Industry, the American Chemical Society, the Electrochemical Society, and the Societe de Chimie Industrielle, held in New York recently.

Mr. Bain discussed the role of one of the ingredients of stainless steels, chromium, in respect to its effect upon the electrochemical properties of its alloys in iron and in respect to its influence on the grain structure of the metal. The roles of carbon and nickel in reference to the specific enhancement of some of the properties of stainless steels were also discussed.

CARRIER DESIGNS NEW UNIT COOLER FOR ICE

(Concluded from Page 1, Column 3)
tions, Carrier engineers claim. As the hot room air is cooled by contact with the melting ice and a series of metal grids upon which the ice rests it is dehumidified, further assuring a maximum of personal comfort during the hot season regardless of outside weather conditions.

The unit consists of a cabinet on wheels standing 4 ft. 3 in. in height, by 2 ft. in width, and is made of sheet steel finished in grained mahogany. The weight of the cabinet, without ice, is 400 lbs. It holds 300 lbs. of ice, this quantity being sufficient to last about 5 hours in hot weather.

The ice rests on a series of metal grids, exposing a large cooling surface to the air.

A small electric-driven blower operated from a light socket draws the air from the room into the cabinet and over the metal surface on which the ice rests, thence back into the room through outlets in the top of the cabinet.

The amount of cooling and direction of air delivery can be regulated by adjusting a set of shutters in the outlets. The capacity is 400 cu. ft. of cooled air per minute.

No extra installation equipment or piping is required. The unit can be operated from any electric outlet. The operating costs necessarily vary according to the price of ice, and the amount of motor current required.

MAIZEWOOD PRODUCTS CORP. MOVES OFFICES

DUBUQUE, Iowa—Main offices of the Maizewood Products Corp., manufacturer of cornstarch insulation, have been moved from Chicago to the factory here.

Only...
IN KEROTEST



Can You Get This Metal
to Metal Back Seat...
The Exclusive Feature that
Insures Against Leakage

Note that bevelled back seat design of the Kerotest Type 416—3-way Packed Manifold Valve and you will appreciate why this valve enjoys such a wide demand among refrigerating engineers. Every single one of these valves is pressure tested in gasoline before being packed.

And that isn't all! Notice the removable top nut making packing replacement a simple operation... how the stem acts independently of the bushing thus closing off the pressure on the THREADED STEM AND NOT on the soldered joint alone.

Moreover, the packing pressure is always at right angles, not downward... always pressed toward the stem... reasons why you can profitably standardize on Kerotest for your refrigerator Valves.

Write for descriptive catalogue.

KEROTEST MANUFACTURING CO.
PITTSBURGH, PA.



LISTED AS
STANDARD BY
UNDERWRITERS'
LABORATORIES



Distributors

Dayton, Ohio.....517 Grafton Avenue
E. J. Kimm
Los Angeles, California...1015 E. Sixteenth St.
Van D. Clothier
Chicago, Illinois...9317 West Marquette Road
G. C. Taylor
Detroit, Mich...6-247 General Motors Bldg.
W. H. Mark Hanna
Cincinnati, Ohio.....Burbank Street
The Merkel Bros. Co.
Washington, D.C.....1333 Wisconsin Avenue
Refrigeration Equipment & Supply Co., Inc.
Milwaukee.....Wisconsin
Chase Brass & Copper Co.

Boston, Massachusetts.....110 High Street
A. E. Borden Co.
Newark, N.J.....Jefferson and Chestnut Streets
McIntire Connector Co.
New York City.....58 Warren Street
Paramount Electrical Supply Co., Inc.
New York City.....246 Fifth Avenue
W. H. Schrank Company
Philadelphia, Pennsylvania...523 Arch Street
Fretz Brass & Copper Co.
Wilmington.....North Carolina
N. Jacobi Hardware Co.
Minneapolis.....Minnesota
Chase Brass & Copper Co.

Greensboro.....North Carolina
Home Appliance Service Co.
St. Louis, Missouri...2817 Laclede Avenue
Brass & Copper Sales Co.
San Francisco, Calif. Merchants Exchange Bldg.
A. W. V. Johnson
Baltimore, Md.....108 South Street
Clendenin Bros., Inc.
Decatur.....Illinois
Field & Shorb Co.

EXPORT DISTRIBUTORS
New York City, New York...116 Broad Street
Mechlor, Armstrong, Dasso Co., Inc.

General Electric GENERAL ELECTRIC CO. Cleveland

Model or Catalog No.	SD-35	S-44	S-67	S-85	S-107	S-146	S-182	P-44	S-65	P-63	P-83	P-110	P-134	P-170	P-180
CABINET SPECIFICATIONS															
Overall dimensions, including hardware															
Height (inches)	30	63 1/2	66 1/2	67 1/2	65 1/2	66 1/2	71 1/2	62 1/2	65 1/2	65 1/2	69 1/2	68 1/2	71 1/2	74 1/2	81 1/2
Width (inches)	42	24 1/2	28 1/2	34 1/2	44 1/2	54 1/2	64 1/2	24 1/2	28 1/2	28 1/2	33 1/2	42	48	61 1/2	44
Depth (inches)	17 1/2	23 1/2	24 1/2	28	25 1/2	25 1/2	28 1/2	23	24 1/2	24 1/2	28	27 1/2	27	27 1/2	27 1/2
Thickness of insulation															
Top of cabinet (inches)	2 1/2	2 1/2	2 1/2	3	2 1/2	3	3 1/2	2 1/2	2 1/2	2 1/2	3 1/2	2 1/2	3	3 1/2	3 1/2
Sides of cabinet (inches)	2 1/2	2 1/2	2 1/2	3	2 1/2	3	3 1/2	2 1/2	2 1/2	2 1/2	3 1/2	2 1/2	3	3 1/2	3 1/2
Bottom of cabinet (inches)	2 1/2	2 1/2	2 1/2	3	2 1/2	3	3 1/2	2 1/2	2 1/2	2 1/2	3 1/2	2 1/2	3	3 1/2	3 1/2
Inside dimensions of cabinet liner															
Height (inches)	28 1/2	31 1/2	33 1/2	34 1/2	32 1/2	33 1/2	33 1/2	31 1/2	33 1/2	33 1/2	35	33	35 1/2	35 1/2	47 1/2
Width (inches)	19	18	22 1/2	27 1/2	38 1/2	47	55 1/2	18	22 1/2	22 1/2	26	35 1/2	40 1/2	53	35 1/2
Depth (inches)	12 1/2	14 1/2	16 1/2	19	17 1/2	18	18 1/2	14 1/2	16 1/2	16 1/2	19	19	18	17	20
Thickness of exterior metal (inches)	.0375	.044	.054	.054	.054	.062	.062	.044	.054	.050	.0375	.050	.050	.050	.050
Thickness of interior metal (inches)	.0375	.044	.054	.054	.054	.062	.062	.044	.054	.050	.0375	.050	.050	.050	.050
Number of refrigerator doors	1	1	1	1	2	2	2	1	1	1	1	2	2	2	4
STORAGE CAPACITY															
Gross food storage capacity (cu. ft.)	3.97	4.92	7.53	10.34	12.28	16.3	19.8	4.92	7.53	7.25	10.0	12.88	15.0	18.58	19.76
Net food storage (cu. ft.) (Nema rating)	3.5	4.4	6.7	8.5	10.65	14.6	18.2	4.4	6.7	6.3	8.3	11.0	13.4	17.0	18.0
Number of shelves	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Total shelf area (sq. ft.) (Nema rating)	7.3	8.0	11.6	16.0	20.0	25.2	30.4	8.0	11.6	11.3	15.4	20.4	22.1	26.7	26.6
Greatest distance between any two shelves	12	11 1/2	13 1/2	13 1/2	13 1/2	13 1/2	13 1/2	11 1/2	13 1/2	13 1/2	13 1/2	13 1/2	13 1/2	13 1/2	13 1/2
Shortest distance between any two shelves	5 1/2	6 1/2	6	6 1/2	5 1/2	6 1/2	6 1/2	6	6	6	6 1/2	6	6	6	6 1/2
ICE CUBE TRAYS															
Number of ice cube trays	2	2	4	4	4	4	4	2	4	4	4	4	4	4	4
Inside dimensions of trays (inches)															
Length (at top of tray)	9	9	10 1/2	12	12	12	12	9	10 1/2	10 1/2	12	12	12	12	12
Width (at top of tray)	3 3/4	3 3/4	4	5	5	5	5	3 3/4	4	4	5	5	5	5	5
Depth	2	2	2	1 1/2	1 1/2	1 1/2	1 1/2	2	2	2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2
Number of cubes produced at one freezing	40	40	84	104	104	104	104	40	84	84	104	104	104	104	104
Weight of ice cubes produced (lbs.)	3 1/2	3 1/2	9	12	12	12	12	3 1/2	9	9	12	12	12	12	12
COMPRESSOR SPECIFICATIONS															
Compressor capacity (lbs.) (ASRE rating)	66	66	82	104	115	115	200	66	82	82	104	115	115	115	200
Motor size (hp.)	1-10	1-10	1-8	1-6	1-6	1-6	1-3	1-10	1-8	1-8	1-6	1-6	1-6	1-6	1-3
Quantity of refrigerant in system (lbs.)	3 1/2	3 1/2	5 1/2	4 1/2	5	5	8	3 1/2	5 1/2	5 1/2	4 1/2	5	5	5	8
Quantity of lubricant in system			1250 c.c.	3 pts.	3 pts.	3 pts.	7 pts.		1250 c.c.	1250 c.c.	3 pts.	3 pts.	3 pts.	3 pts.	7 pts.
WEIGHT															
Net weight of complete refrigerator (lbs.)	275	262	371	496	615	677	997	228	369	369	501	611	686	927	965
Total shipping weight (lbs.)	307	370	486	624	774	874	1333	400	474	474	610	787	878	1186	1202
PRICE															
F. o. b. factory price	\$200	167	235	335	440	540	695	207	270	260	355	415	515	695	705

WEIGHT																			
Net weight of complete refrigerator (lbs.)...		275	262	371	496	615	677	997	228	369	369	501	611	686	927	965			
Total shipping weight (lbs.)		307	370	486	624	774	874	1333	400	474	474	610	787	878	1186	1202			
PRICE																			
F, o. b. factory price.....		\$200	167	235	335	440	540	695	207	270	260	355	415	515	605	705			
CABINET MATERIALS						DOORS				REFRIGERANT									
Make of cabinet.....		General Electric				Material used for breaker strip.....				Textolite				Refrigerant used.....				Sulphur Dioxide	
Material used for exterior.....		S models—one piece steel shell; all others—steel panels				Material used for gasket.....				Rubber				Trade name.....					
						Make or brand of gasket.....				General Electric				Chemical formula.....				SO ₂	
EVAPORATOR						LUBRICATION													
Make of evaporator.....		General Electric				Make of evaporator.....				Shell and tube				Make of compressor lubricant.....				Mineral oil	
Evaporator construction.....		Steel				Evaporator construction.....				High side float				When should motor be oiled....				Never	
Material used for evaporator.....		None				Metal used for evaporator.....				None				MOTOR					
Type of refrigerant control.....		S-67, P-63 & P-53				Type of refrigerant control.....				S-67, P-44, S-67, SD-35, S-44 & P-44				Make of motor.....				General Electric	
Make of expansion valve.....		General Electric				Make of expansion valve.....				Glycerine				Type of motor.....				Models SD-35, S-44, S-67, P-44, PS-65 & P-63—split phase; all others—capacitor	
Finish of shelves.....		Special multi-plate				Make of brine tank.....				SD-35, S-44 & P-44				Method of starting.....				Unloader	
INSULATION						Solvection													
Make of insulation.....		S models—Thermocraft; all others—Celotex, Insulite, or Dry-Zero				Solution used for brine.....				Glycerine				How adapted to odd frequency.....				Special motor	
						Type and make of trays.....				SD-35, S-44 & P-44				What additional cost is entailed.....				None	
Nature of insulating material.....		Vegetable				Dimensions of ice cube (inches).....				—1x1½x2; models S-67, PS-65, & P-63				How adapted to direct current.....				Converter	
Bulk or formed slabs.....		Formed slabs								—1x1½x2; all others—1x2½x1½				What additional cost is entailed.....				Models S-132 & P-44—\$35; all others—\$15	
FINISH						SPECIAL FEATURES				CONTROL									
Cabinet finish (exterior).....		SD & S models—Sanak lacquer; all others—porcelain with galvanized back & bottom				Vegetable Tray				Make of control.....						General Electric			
										Type of control.....						Temperature			
Make of exterior finish.....		General Electric				COMPRESSOR				Make of compressor.....						General Electric			
Colors offered as standard.....		White				Type of system.....				Hermetic						Temperature regulation method.....		Manual regulator	
Colors offered on special order.....		Any color				Type of compressor.....				Reciprocating—oscillating cylinder						Make of overload cut-out.....		General Electric	
Cabinet finish (interior).....		Acid resisting porcelain				Compressor drive.....				Direct						How is defrosting accomplished.....		Shut down unit	
Make of interior finish.....						Type and make of shaft seal.....				None						POLICY			
						Location of compressor.....				Model SD-35—side; all others—above						Who determines retail price.....		Distributor	
HARDWARE						CONDENSER										Guarantee period on cabinet.....		One year	
Make of hardware.....		General Electric				Make of condenser.....				General Electric						Guarantee period on system.....		Four years	
Process of manufacture.....		Stamped				Fan or natural draft cooling.....				Natural						By whom serviced.....		Minor adjustments—dealer or distributor; all others—factory	
Basic metal of hardware.....		Brass				Type of condenser.....				Plain tube						Are replacement parts sold to independent service companies.....		No	
Finish of hardware.....		Chromium																	

Mayflower TRUPAR MFG. CO. 140 Davis Ave., Dayton

Model or Catalog No.....	P-24	P-25	P-34	P-35	P-36	P-55	P-56	P-65	P-66	P-75	P-76	P-86	P-96
CABINET SPECIFICATIONS													
Overall dimensions, including hardware													
Height (inches).....	51	57	51	57	60	52½	52½	55	55	59½	59½	61½	65½
Width (inches).....	24½	27	24½	27	29½	26	26	26½	26½	30½	30½	35½	35½
Depth (inches).....	20½	20	20½	20	24	20	20	22½	22½	24½	24½	25	25
Thickness of insulation													
Top of cabinet (inches).....	2	2½	2	2½	3½	2½	2½	3	3	3½	3½	3½	3½
Sides of cabinet (inches).....	2	2½	2	2½	3½	2½	2½	3	3	3½	3½	3½	3½
Bottom of cabinet (inches).....	2½	3	2½	3	4	3	3	3½	3½	4	4	4	4
Inside dimensions of cabinet liner													
Height (inches).....	26	30¾	26	30¾	31½	25½	25¾	30¾	30¾	33¾	33¾	31¾	35¾
Width (inches).....	19½	21½	19½	21½	21½	19¾	19¾	19¾	19¾	22	22	26¾	26¾
Depth (inches).....	15½	14½	15½	14½	16½	15½	15½	16½	16½	17½	17½	18½	18½
Thickness of exterior metal (gauge).....	20	20	20	20	20	18	18	18	18	18	18	18	18
Thickness of interior metal (gauge).....	20	20	20	20	20	18	18	18	18	18	18	18	18
Number of refrigerator doors.....	1	1	1	1	1	1	1	1	1	1	1	2	2
STORAGE CAPACITY													
Gross food storage capacity (cu. ft.).....	4.6	5.5	4.6	5.5	6.5	4.6	4.6	5.5	5.5	7.6	7.6	8.6	9.3
Net food storage (cu. ft.) (Nema rating)...	4	5	4	5	6	4	4	5	5	6.6	6.5	7.5	8.5
Number of shelves.....	4	4	4	4	4	3	3	4	4	4	4	4	4
Total shelf area (sq. ft.) (Nema rating)...	7.5	9.5	7.5	9.5	11.5	7.0	7.0	10.0	10.0	12.5	12.5	14.5	18.5
Greatest distance between any two shelves..	12½	13	12½	13	13	12¾	12¾	13	13	15½	17¾	17¾	17¾
Shortest distance between any two shelves..	6½	5¾	6½	5¾	6	6¾	6¾	5¾	5¾	6¾	5¾	5¾	6¾
ICE CUBE TRAYS													
Number of ice cube trays.....	4	4	2	3	3	2	2	3	3	4	4	4	4
Inside dimensions of trays (inches)													
Length (at top of tray).....	9½	9½	9½	9½	9½	9½	9½	9½	9½	9½	9½	9½	9½
Width (at top of tray).....	3¾	3¾	5	5	5	5	5	5	5	5	5	5	5
Depth.....	1½	1½	1½	1½	1½	1½	1½	1½	1½	1½	1½	1½	1½
Number of cubes produced at one freezing..	84	84	66	84	84	56	56	84	84	112	112	112	112
Weight of ice cubes produced (lbs.).....	6	6	4	6	6	4	4	6	6	8	8	8	8
COMPRESSOR SPECIFICATIONS													
Compressor capacity (lbs.) (ASRE rating)...	80	80	90	90	90	90	90	90	90	125	125	140	140
Motor size (hp.).....	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-5	1-5	1-4	1-4
Quantity of refrigerant in system (lbs.)....	2	2	3½	4½	4½	4	4	4½	4½	5	5	5	5½
Quantity of lubricant in system.....	12 oz.	12 oz.	20 oz.	20 oz.	20 oz.	20 oz.	20 oz.	20 oz.	20 oz.	24 oz.	24 oz.	24 oz.	24 oz.
WEIGHT													
Net weight of complete refrigerator (lbs.)...													
Total shipping weight (lbs.).....	296	332	306	390	395	337	355	396	399	489	501	637	661
PRICE													
F. o. b. factory price.....	\$129.50	149.50	169.50	185.00	210.00	185.00	199.50	205.00	220.00	255.00	280.00	335.00	375.00
Installed price.....	\$129.50	149.50	169.50	185.00	210.00	185.00	199.50	205.00	220.00	255.00	280.00	335.00	375.00

Early Romans Attentive to Ventilation; Latest Feature is Air Cooling

By Louis Ruthenburg

President, Copeland Products, Inc., and Chairman, Nema Refrigeration Division

AIR conditioning has but recently become a part of the general public consciousness. Yet its beginnings go back so far that they are lost along with the traces of the earliest dwellers in caves, tents and primitive shelters.

The Romans, who were engineers and builders, might well have been expected to be first to provide for ventilation in their buildings.

They provided special openings in the roofs of their structures to provide for the escape of air. This arrangement, however, was not to provide a fresh air supply for the buildings, but to permit the escape of the heated air in warm weather. However, ventilation, unquestionably, must have been an incidental feature.

Apparently the first recognition of the need of fresh air came from the necessity of securing a supply of fresh air in mines. It was this feature that called attention to the necessity of ventilation independent of heating.

The first buildings to be provided with ventilation in England and the United States were the meeting places of legislative assemblies.

Ventilation, it may be said for purposes of a mutual understanding, has for its object the maintenance of a supply of pure air indoors. This can be accomplished only by bringing fresh air into the building and removing the impure air, two functions that go together.

An important feature of ventilation is the removal of dust. In modern plants and many buildings, dust is removed from the air by washing with sprays and then removing the excess moisture from the air.

Use of Humidistats

In some plants the humidity is maintained at any desired percentage by automatic regulators, called humidistats, which control the amount of moisture as thermostats control the amount of heat. Air too moist is dried and air too dry is moistened by spraying with water.

Also, in the process of washing nearly all the bacteria are removed, a very important factor for health.

Contrary to age-old custom and belief, ventilation through open windows is not effective so far as introducing fresh air is concerned. It does, however, assist in regulating temperature and to some extent aids in controlling humidity.

Progress in Ventilation

In modern structures ventilation is accomplished by the positive mechanical means of fans and blowers. The latest systems are designed so as to be effective with the windows open, thus eliminating the objections to keeping windows closed, raised by many people.

The bad effects of poor ventilation are high temperature and lack of circulation. It is desirable to supply each person in a room with 30 cu. ft. of fresh air per minute, or 1,800 cu. ft. per hour.

Ventilation is grouped into two classifications: gravity and mechanical. Gravity ventilation is based on the fact that warm air, which is lighter than cold,

risks and cold air descends. However, in warm weather the difference in the temperature of the inside air and the outside air is so slight that very little ventilation results.

Mechanical ventilation utilizes machinery for the movement of the air. It may be used either to introduce fresh air, to remove foul air, or both. The most generally used equipment is fans or blowers placed in the air ducts, which either force the air ahead of them or create a vacuum into which it rushes. The method of blowing the air in is known as *plenum*, and that of sucking out the air is known as *vacuum*.

Engineers have the information needed to design properly fans or blowers, as well as to lay out the system of pipes.

To Heating Is Added—Cooling

The story of modern heating methods is a long and interesting one. Added to the methods used for heating and conditioning air, are the means now being developed for cooling it to provide relief from the hot summer days.

The first applications of cooling and dehumidifying air were large installations in theatres, office buildings and large stores.

The demand for cooling air in hot weather has increased so that air cooling appliances are being provided for small business places, offices, restaurants, homes, and even for railway cars. Great as has been this evolution during the past few years, we are only at the threshold of cooling applications as yet undreamed of.

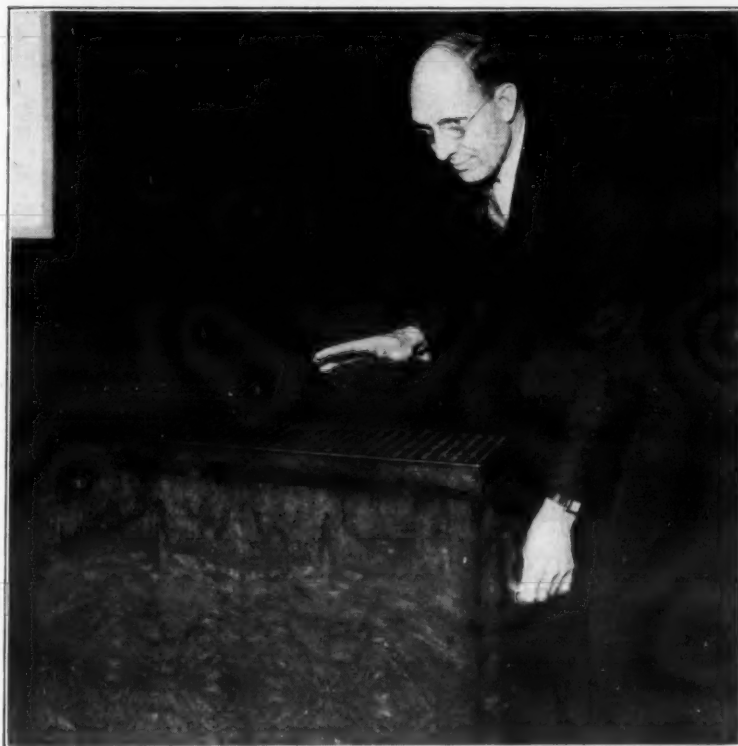
Without attempting at this writing to go into any of the mechanical requirements and technical data relative to the cooling of air in summer, suffice it to say that enough information is available to enable the proper equipment to be supplied and to make possible reliable estimates of cost beforehand.

Home Cooling

Increasing interest is being manifested in cooling homes. It is not necessary to cool the entire house. That, obviously, is quite expensive, and unless the home has been built with air cooling especially in mind any method of attempting to cool it would be highly inefficient, due to escape of the cooled air because of improper design, insulation, and construction.

One type of cooling equipment for homes that is coming on the market is known as spot cooling. That is, cooling units are located in the room or rooms, or other space, that is to be cooled, such as the library, dining room, living room, or bedrooms. It is not always necessary

Kettering and One of His Pets



C. F. Kettering, well-known G-M engineer, aided the development of the Frigidaire air conditioner with which he is pictured above.

to cool bedrooms, as there may be sufficient currents of air by retiring time to make them comfortable.

In cooling residences, it is not necessary to cool all rooms at the same time. The dining room would be cooled only at eating time. The den, library or liv-

ing room would be cooled only when it was to be used. And the bedrooms only at night.

This optional cooling of rooms is made possible by controls which enable one to switch the refrigeration to the rooms desired. All cooling units in the

rooms are, of course, connected to one central condensing unit which operates the equipment.

As to costs, these will naturally vary according to the size and nature of the installation, and may well run from \$1,000 to \$10,000. The same variations will occur as with heating systems, except that it is a more costly process to cool than to heat.

Costs will come down with the development and growth of the industry, as in all other lines. As the general public comes to demand cooling in summer as it has been educated to demand heating in winter, costs will be decreased as efficiency of design of equipment, construction of buildings, and other factors involved increase.

Heating and Ventilating, one of the publications devoted to this subject, gives the following forecast of heating, ventilating, and air conditioning work to be done in 1932:

Residences	\$ 27,716,000	17.3%
Industrial	4,941,000	3.1%
All Others	127,180,000	79.6%

Gaining Attention of Industry

Each day adds to the number of companies turning their attention to some phase of air conditioning. It is safe to say that practically every manufacturer of warm air heating equipment is giving more or less serious thought to making their installations serve for cooling in summer as they heat in winter. No less than seven or eight manufacturers of heating appliances have taken some action towards supplying cooling or air conditioning equipment of some kind.

In addition, there are probably half a dozen companies making air conditioning equipment exclusively. And there are from 150 to 200 companies making different kinds of appliances or supplying various materials used in the manufacture of air conditioning equipment of one kind or another. Air conditioning is becoming an ever-increasingly important industry, and its future should be as great as that of heating appliances.

COPPER

HYDROGEN...

ELECTRICALLY

WELDED

THE most modern and economical method of welding steel parts with pure copper is Copper Hydrogen Electric Welding.

Several welds are possible in one operation through the utilization of a hydrogen-charged electric furnace.

This is a development that is attracting the attention of engineers and designers of refrigerating equipment.

The advantages of this process are long life — gas

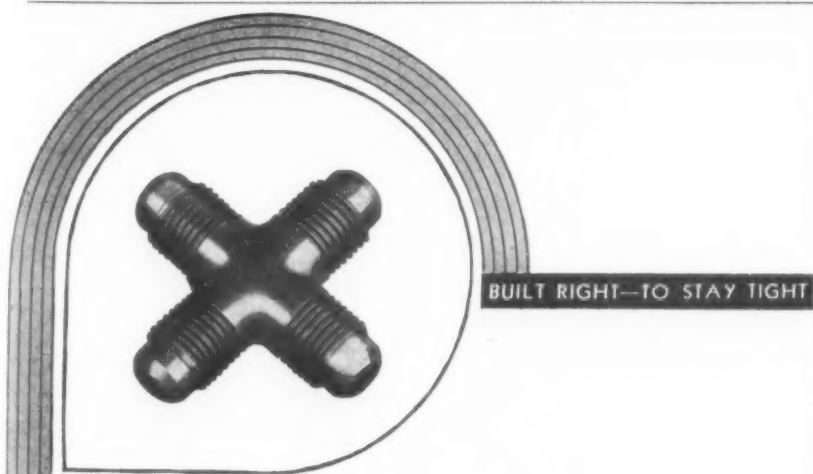
tightness — strength at the joints and a clean welded surface.

This process is scientifically sound.

You should investigate Copper Hydrogen Electric Welding for your equipment. Write for full information.

BUNDY TUBING COMPANY
4815 BELLEVUE AVE., DETROIT, MICH., U. S. A.

BUNDYWELD TUBING



SPECIFIED BY THE REFRIGERATION INDUSTRY

EVER since the first automatic refrigerator was placed on the market, Commonwealth Brass fittings have been specified by the industry.

Year by year has added to the increment of precise information as to the requirements of refrigeration and fittings as produced now bear only a slight resemblance to those used in 1914.

Commonwealth Brass Fittings have been and are continually used by leaders in the business. From the standpoint of design, manufacture, materials and inspection these fittings represent the last word in Seepage-Proof construction embodying all the experience of veterans in this particular business.

COMMONWEALTH BRASS CORPORATION
COMMONWEALTH AT G. T. R. R.
DETROIT, MICHIGAN

Send for a copy of our catalog No. 36, fully descriptive of our complete line of stock fittings.

Cavalier

TENNESSEE FURNITURE CORP.
Chattanooga, Tenn.

Model or Catalog No.	101	119	111	112	121	122	131	132	141	142	152
CABINET SPECIFICATIONS											
Overall dimensions, including hardware	56	58	59 1/2	59 1/2	62 1/2	62 1/2	65 1/2	65 1/2	65 1/2	65 1/2	65 1/2
Height (inches)	24 1/2	26 1/2	24 1/2	24 1/2	26 1/2	26 1/2	30 1/2	30 1/2	34 1/2	34 1/2	40 1/2
Width (inches)	22 1/2	22 1/2	22 1/2	22 1/2	23 1/2	23 1/2	28 1/2	28 1/2	23 1/2	23 1/2	23 1/2
Depth (inches)	22 1/2	22 1/2	22 1/2	22 1/2	22 1/2	22 1/2	22 1/2	22 1/2	22 1/2	22 1/2	22 1/2
Thickness of insulation	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2
Top of cabinet (inches)	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2
Sides of cabinet (inches)	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2
Bottom of cabinet (inches)	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2
Inside dimensions of cabinet liner	27 1/2	30 1/2	27 1/2	27 1/2	30 1/2	30 1/2	32 1/2	32 1/2	32 1/2	32 1/2	32 1/2
Height (inches)	19 1/2	20 1/2	19 1/2	19 1/2	20 1/2	20 1/2	23 1/2	23 1/2	28 1/2	28 1/2	33 1/2
Width (inches)	15 1/2	16 1/2	15 1/2	15 1/2	16 1/2	16 1/2	15 1/2	15 1/2	15 1/2	15 1/2	15 1/2
Depth (inches)	15 1/2	15 1/2	15 1/2	15 1/2	15 1/2	15 1/2	15 1/2	15 1/2	15 1/2	15 1/2	15 1/2
Thickness of exterior metal (gauge)	22	20	22	20	20	20	20	20	20	20	20
Thickness of interior metal (gauge)	22	20	22	20	20	20	20	20	20	20	20
Number of refrigerator doors	1	1	1	1	1	1	1	1	1	1	2

Gross food storage capacity (cu. ft.)	4.65	5.72	4.65	4.65	5.72	5.72	6.78	6.78	8.04	8.04	9.61
Net food storage (cu. ft.) (Nema rating)	4.13	5.09	4.13	4.13	5.09	5.09	6.04	6.04	7.30	7.30	8.84
Number of shelves	3	3	3	3	3	3	3	3	3	3	5
Total shelf area (sq. ft.) (Nema rating)	8.94	10.41	8.94	8.94	10.41	10.41	11.91	11.91	13.76	13.76	15.36
Greatest distance between any two shelves	5 1/2	6 1/2	5 1/2	5 1/2	6 1/2	6 1/2	6 1/2	6 1/2	6 1/2	6 1/2	7
Shortest distance between any two shelves	4 1/2	5	4 1/2	4 1/2	5	5	4 1/2	4 1/2	4 1/2	4 1/2	5 1/2

ICE CUBE TRAYS											
Number of ice cube trays	3	3	3	3	3	3	3	3	4	4	5
Inside dimensions of trays (inches)	7 1/4	7 1/4	7 1/4	7 1/4	7 1/4	7 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4
Length (at top of tray)	3 1/2	3 1/2	3 1/2	3 1/2	3 1/2	3 1/2	3 1/2	3 1/2	3 1/2	3 1/2	3 1/2
Width (at top of tray)	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2
Depth (inches)	30	30	30	30	30	30	63	63	84	84	105
Number of cubes produced at one freezing	3	3	3	3	3	3	6	6	8	8	10
Weight of ice cubes produced (lbs.)	3	3	3	3	3	3	6	6	8	8	10

COMPRESSOR SPECIFICATIONS											
Compressor capacity (lbs.) (ASRE rating)	125	125	125	125	125	125	125	125	175	175	175
Motor size (hp.)	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-4	1-4	1-4
Quantity of refrigerant in system (lbs.)	2	2	2	2	2	2	2	2	2	2	2
Quantity of lubricant in system	1 pt.	1 pt.	1 pt.	1 pt.	1 pt.	1 pt.	1 pt.	1 pt.	1 pt.	1 pt.	1 pt.

WEIGHT											
Net weight of complete refrigerator (lbs.)	246	286	256	275	283	308	331	339	370	376	428
Total shipping weight (lbs.)	317	358	334	344	376	388	417	424	462	468	518

CABINET MATERIALS

Make of cabinet	Tennessee Furniture
Material used for exterior	Metal
Make of exterior metal	Lacquer—Furniture sheet; porcelain—Armco
Material used for frame	Wood
Make of interior metal	Armco
Finish of shelves	Tinned

INSULATION

Make of insulation	Dry-Zero
Nature of insulating material	Vegetable
Bulk or formed slabs	Formed slabs

FINISH

Cabinet finish (exterior)	101, 119, 111, 121, 131, 141—lacquer; others—porcelain
Make of exterior finish	Lacquer—Lily Varnish Co.; porcelain—Chicago Vitreous Enamel Co.

Colors offered as standard	White
Colors offered on special order	Large orders—any color

Cabinet finish (interior)	Porcelain
Make of interior finish	Chicago Vitreous Enamel Co.

HARDWARE

Make of hardware	Grand Rapids Brass
Process of manufacture	Stamped
Basic metal of hardware	Brass
Finish of hardware	Chromium

DOORS

Material used for breaker strip	Model 101—wood; others—Formica
Material used for gasket	Rubber
Make or brand of gasket	Miller

EVAPORATOR

Make of evaporator	Sunbeam
Evaporator construction	Tubular
Material used for evaporator	Copper
Type of refrigerant control	Expansion valve
Make of expansion valve	American Radiator
Make of brine tank	None
Type and make of trays	Aluminum
Dimensions of ice cube (inches)	1 1/4, 1 1/2 & 1 3/4—1 1/2 x 1 1/2 x 1 1/2; all other models—1 1/2 x 1 1/2 x 1 1/2

SPECIAL FEATURES

All models except 101 & 119—Vegetable storage bin

COMPRESSOR

Make of compressor	Sunbeam
Type of system	Conventional
Type of compressor	Rotary
Compressor drive	Direct
Type and make of shaft seal	Sylphon
Location of compressor	Above

CONDENSER

Make of condenser	Fedders
Fan or natural draft cooling	Fan
Type of condenser	Finned tube

REFRIGERANT

Refrigerant used	Sulphur dioxide
Chemical formula	SO ₂

LUBRICATION

Make of compressor lubricant	Argon
When should motor be oiled	Semi-annually

MOTOR

Make of motor	Century
Type of motor	Repulsion-Induction
Method of starting	Direct
How adapted to odd frequency	Change motor
How adapted to direct current	Change motor
What additional cost is entailed	None

CONTROL

Make of control	General Electric or Penn
Type of control	Temperature
Temperature regulation method	Manual regulator
Make of overload cut-out	General Electric or Penn
How is defrosting accomplished	Shut down unit

POLICY

Who determines retail price	Distributor or retailer
Guarantee period on cabinet	One year
Guarantee period on system	Three years
By whom serviced	Minor repairs—dealer or distributor; All others—factory
Are replacement parts sold to independent service companies	No

Frigidaire

FRIGIDAIRE CORP.
Dayton

Model or Catalog No.	ML-6	ML-5	ML-4	W-12	W-10	W-8	W-6	W-5	W-4	W-3
CABINET SPECIFICATIONS										
Overall dimensions, including hardware	62 1/2	54 1/2	53 1/2	66 1/2	66 1/2	61 1/2	65 1/2	62 1/2	54 1/2	53 1/2
Height (inches)	28 1/2	26 1/2	24	46 1/2	37 1/2	35 1/2	31 1/2	28 1/2	26 1/2	24
Width (inches)	22 1/2	22 1/2	19 1/2	28 1/2	28 1/2	25 1/2	25	25	23 1/2	20 1/2
Depth (inches)	22 1/2	22 1/2	22 1/2	22 1/2	22 1/2	22 1/2	22 1/2	22 1/2	22 1/2	22 1/2
Thickness of insulation	1 1/2	1 1/2	1 1/2	2 1/2	2 1/2	2 1/2	3	2 1/2	2	1 1/2
Top of cabinet (inches)	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	3	2 1/2	2	1 1/2
Sides of cabinet (inches)	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	3 1/2	3	2	1 1/2
Bottom of cabinet (inches)	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	3 1/2	3	2	1 1/2
Inside dimensions of cabinet liner	33 1/2	27 1/2	28 1/2	35 1/2	35 1/2	30 1/2	34 1/2	32 1/2	26 1/2	27 1/2
Height (inches)	22 1/2	21 1/2	20 1/2	39 1/2	30 1/2	28 1/2	23 1/2	20 1/2	20 1/2	19
Width (inches)	17 1/2	17 1/2	14 1/2	19 1/2	19 1/2	16 1/2	16 1/2	16 1/2	16 1/2	13 1/2
Depth (inches)	30	20	20	20	20	20	20	20	20	20
Thickness of exterior metal (gauge)	18	18	20	18	18	18	18	18	20	20
Thickness of interior metal (gauge)	18	18	20	18	18	18	18	18	20	20
Number of refrigerator doors	1	1	1	2	2	2	1	1	1	1

Gross food storage capacity (cu. ft.)	7.7	6.0	4.8	16.0	12.3	10.0	7.8	6.4	5.3	4.1
Net food storage (cu. ft.) (Nema rating)	6.6	5.0	4.0	13.1	10.3	8.1	6.6	5.2	4.1	3.2
Number of shelves	5	4	4	8	8	6	5	5	4	4
Total shelf area (sq. ft.) (Nema rating)	13.2	10.2	8.7	24.7	19.9	15.0	14.5	11.5	9.8	6.9
Greatest distance between any two shelves	10 1/2	10 1/2	12 1/2	10 1/2	10 1/2	10 1/2	11	10	10	12
Shortest distance between any two shelves	4 1/2	4	4	5 1/2	5 1/2	6 1/2	5	4	4 1/2	4

ICE CUBE TRAYS										
Number of ice cube trays	2	2	2	4	3	3	3	3	2	2
Inside dimensions of trays (inches)	11 1/2	11 1/2	8 1/2	12 1/2	12 1/2	12 1/2	11 1/2	11 1/2	8 1/2	8 1/2
Length (at top of tray)	4 1/2	4 1/2	4 1/2	4 1/2	4 1/2	4 1/2	4 1/2	4 1/2	4 1/2	4 1/2
Width (at top of tray)	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2
Depth (inches)	42	42	30	96	72	72	63	63	30	30
Number of cubes produced at one freezing	6	6	4	13 1/2	10	10 1/2	9	9	4	4
Weight of ice cubes produced (lbs.)	6	6	4	13 1/2	10	10 1/2	9	9	4	4

COMPRESSOR SPECIFICATIONS										
Compressor capacity (lbs.) (ASRE rating)	145	145	120	222	185	185	185	145	145	120
Motor size (hp.)	1-5	1-5	1-6	1-3	1-4	1-4	1-4	1-5	1-5	1-6
Quantity of refrigerant in system (lbs.)	4 1/2	4 1/2	3 1/2	11 1/2	10	10	5 1/2	4 1/2	3 1/2	3 1/2
Quantity of lubricant in system	2 lbs.	2 lbs.	2 lbs.	3 lbs.	3 lbs.	3 lbs.	2 1/2 lbs.	2 lbs.	2 lbs.	2 lbs.

WEIGHT										
Net weight of complete refrigerator (lbs.)	398	337	300	830	745	673	690	523	421	363
Total shipping weight (lbs.)	499	438	401	1024	861	787	697	621	494	433

PRICE										
F. o. b. factory price	\$175	150	130	420	380	300	225	200	175	160
Price, without installation										

CABINET MATERIALS

Make of cabinet	Frigidaire
Material used for exterior	Metal
Make of exterior metal	Enameling iron
Material used for frame	Wood, metal reinforced
Make of interior metal	Enameling iron
Finish of shelves	Tinned

INSULATION

Make of insulation	Porcelain models—Rock Cork
Nature of insulating material	Mineral
Bulk or formed slabs	Formed slabs

FINISH</

'W9XG' OF MAJESTIC TESTING TELEVISION

LAFAYETTE, Ind.—Test broadcasts of television programs are now being made on a regular schedule by Station W9XG, here.

This station has been developed over a three-year period by cooperation between the research department of Purdue University and the Grigsby-Grunow Co. of Chicago, maker of Majestic refrigerators. Work was begun on W9XG May 7, 1929, and, to date, over \$70,000 has been expended in experimental work, special equipment, the unique antenna mast, the station building and the transmitter, according to Majestic engineers. This was one of the first stations to receive a license from the Federal Radio Commission.

Listeners' Reports Invited

Experimenters, and others owning television receivers, are invited to tune in on W9XG broadcasts and send in reports on both "ghosting" and coverage. They can be picked up with either a cathode ray television receiver, arranged for automatic synchronization, or a set of the scanning disc type using a 60-hole single spiral disc running at 1,200 r.p.m.

Broadcasting is now done on Tuesdays and Thursdays with three 30 to 45-minute periods beginning at 2 p. m., 7 p. m. and 10 p. m., Central Standard Time. Transmission is 60 lines per frame, 20 frames per second, negative images, at 2,800 kilocycles or 107.1 meters.

All work is done under the active direction of Prof. C. F. Harding, head of the department of electrical engineering, and Research Assistant R. H. Potter, dean of engineering. Representing Majestic is Mr. H. E. Kranz, vice president in charge of engineering, Grigsby-Grunow Co.

Elimination of "Ghost" Pictures

The elimination of "ghost pictures" is one of the most important achievements which the engineers hope these broadcasts will accomplish. Ghost pictures are faint duplicates of the main images which appear beside, and slightly overlapping, the images they duplicate because they are received a fraction of a second later than the main image. They are attributed to the fact that the usual transmitter sends out two waves, the "sky" wave and the "ground" wave, and it is the sky wave which arrives behind time.

This sky wave is believed to travel from the antenna at a high angle, and, at an altitude of 150 to 275 miles, strike the "heavyside" layer of ionized air where it is reflected back to earth. The ground wave, on the other hand, follows the curvature of the earth.

Trying a Vertical Antenna

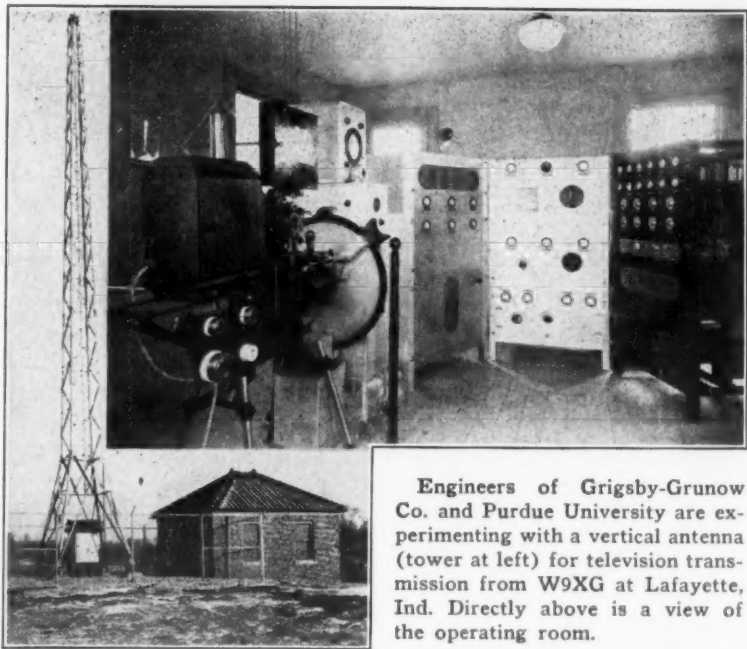
The engineers of W9XG believe they have accomplished elimination of the sky wave by the use of a vertical antenna. The tower of the antenna is, in height, just one-quarter the length of the emitted wave. The effect of this is to spray the waves outward horizontally, with only a negligible amount of energy going into a sky wave which should dissipate itself in the upper atmosphere.

An improved method of modulation is being used that permits of holding a uniform intensity of back-ground, which, in many experiments, has had a tendency to become too light or too dark. Modulation means the mixing of the picture impulses with the radio wave which is to carry them to the receivers, and one can bring about 100 per cent modulation, 85 per cent modulation, or any other degree.

The engineers of W9XG have found that full 100 per cent modulation on somewhat reduced power is giving far better results than increasing the energy output and effecting a lesser percentage of modulation. Daily tests and experimentation, however, are permitting gradual increase in transmitted energy from the 300 watts used at the start, and in the very near future, approximately 1,000 watts will be radiated without loss of clarity due to fractional modulation, they believe.

Some of the accomplishments to date

Scene of Television Experiments



Engineers of Grigsby-Grunow Co. and Purdue University are experimenting with a vertical antenna (tower at left) for television transmission from W9XG at Lafayette, Ind. Directly above is a view of the operating room.

include adaptation of the cathode-ray tube to monitor and modulation work, improvement of these tubes for reception purposes to produce much greater detail with a white rather than a green background, and redesigning of their filament construction so that it is simplified for factory production, the engineers claim.

While all of this work, so far, has been of importance, even the most optimistic of engineers feel there is nothing to indicate that commercially practical television is to be ready in the immediate future, according to Purdue-Majestic technicians. Television reception with sustained entertainment value is unquestionably still quite a long way off, they state.

G. E. ELECTRIC EAR RECORDS SOUND LEVELS OF OPERA

SCHENECTADY, N. Y.—While human hands applauded the efforts of Lily Pons, Beniamino Gigli, and other artists in a gala performance of Verdi's "Rigoletto" at the Metropolitan Opera House in New York City on April 27, an "electric ear" in Box 42 of the Metropolitan's grand tier faithfully recorded the sound levels attained during the evening by the singers, the orchestra, and the audience.

This audio sound meter, developed in the general engineering laboratory of the General Electric Co., found, among other things, that the flute-like coloratura soprano of Lily Pons registered 75 decibels and Gigli's tenor 77 decibels, while a street car in full progress makes only 65 decibels. The "electric ear" also discovered that the orchestra, at the peak of the overture, registered 96 decibels, one unit more than the roar of the subway.

A further discovery of interest was that an opera house packed with people could attain by a great margin a lower sound level at one point in the performance than the same opera house when completely empty.

M. S. Mead of the General Electric Co. installed the sound meter and conducted the tests, utilizing the microphones of the National Broadcasting Co., which have been carrying Saturday afternoon opera broadcasts to listeners all over the country. The microphones were suspended about 30 ft. over the footlights, facing downward.

The quietest moment of the opera occurred just after the murder scene, when the hush through the house sent the meter's hands down to 24 decibels, slightly above the stillness of a country garden. This was interesting in view of the fact that before the opera began the empty auditorium registered 45, showing that an audience will absorb street noises by its presence.

FRENCH LINE SHIPS INCREASE REFRIGERATED SPACE

OAKLAND, Calif.—The General Steamship Corp., agent on the Pacific Coast for the French Line, has announced that the line's five ships plying from Pacific Coast ports to Europe will have increased refrigerator space before the fall fruit shipping season. It is planned to increase refrigerator space from 24,000 cu. ft. to 66,000 cu. ft., and to have sailings every 10 days.

Esco Designs Larger Milk Cooler

(Concluded from Page 1, Column 4) and sealed for protection against moisture.

Top and bottom of the lid to the cabinet are covered with rust-resisting galvanized Armo Ingot iron. Insulation in the lid is 2 in.

The frame is constructed with 3x3 in. side, end, top and bottom rails, and corner posts, constructed to withstand stress, strain and hard usage.

A special aluminum finish is used on the cabinet. The bottom inside rack is of corrugated rust-resisting galvanized Armo Ingot iron.

A bronze 1/4-in. drain outlet is provided. Bottom outlet drain has 1/4-in. fitting for aerator connection.

FERRO ANNOUNCES COURSE ON PORCELAIN, JUNE 20-25

(Concluded from Page 1, Column 5) shop troubles will be given, and in the afternoon process control and control methods will be discussed. Friday's sessions will consider wage incentives and production methods. Saturday's will be devoted to the subjects of cost accounting and budgeting in the enamel shop, and development in enameling furnaces and equipment.

FRIGIDAIRE CONDITIONERS USED IN SCRANTON INN

SCRANTON, Pa.—Three Frigidaire room coolers have been installed at the Spruce Tree Inn by the Automatic Equipment Co., Frigidaire dealer here. This is probably the first installation of an air conditioning job, except those in theatres, in this part of the state.



D. R. VANNEMAN
Consulting Engineer



T. C. FEDDERS
Vice Pres. Chg. Manufacturing



F. G. SLAGEL
Chief Engineer



J. ASKIN



L. C. SMITH



J. F. WILLIAMS



B. B. RHODES



F. H. WALKER



F. A. HAAG



E. E. HUMPHREY



E. G. WAGNER



K. OKADA

The entire FEDDERS Refrigeration

Engineering Staff is Working for YOU

ENGINEERING is the basis of Dependability! With refrigerator manufacturers giving three and four year guarantees, refrigeration equipment MUST BE DEPENDABLE.

The Fedders Engineering Board has specialized in the development and perfection of refrigeration appliances for years. Their individual and combined experience stands back of every manufacturer using Fedders equipment for domestic and commercial refrigeration.

Every feature of Fedders engineering design contributes to dependability and service economy. Fedders engineers work on the principle that an electric refrigerator must not only sell, but *Stay Sold!*

You will find many exclusive Fedders engineering features illustrated and described in a new series of catalog bulletins just off the presses. Write for your copies, or mail the handy coupon at the lower right hand corner of this page.

FEDDERS MANUFACTURING CO

57 Tonawanda Street, Buffalo, N. Y.

EXPORT DIVISION: 116 Broad Street, New York City
PACIFIC COAST REPRESENTATIVES: Refrigeration Products, Ltd.,
1110 North Alameda St., Los Angeles, Cal.
1185 Mission St., San Francisco, Cal.

Fedders Appliances are fully patented and will be protected

CITES NEATNESS AS AN AID TO GOOD SERVICE WORK

GREENVILLE, Mich.—"The way in which a service man does his inspection and work in the owner's kitchen is just as important as the work itself," says Elmer F. Born, service manager of the Gibson Refrigerator Corp.

"If he is neat and cheerful about it, works easily and quickly, he keeps Gibson owners smiling. And that is part of his job, just as much as doing his work correctly."

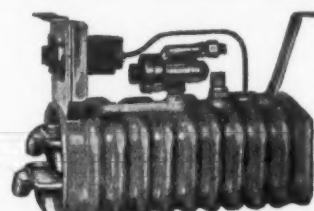
Mr. Born's service schools train the man not only in technical phases of service, but in fostering pleasant relations between owner and company as well.

Mr. Born was educated at the University of Wisconsin, and for the last 13 years has been connected with motor and refrigerator companies.

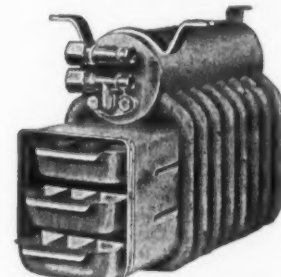


ACE
HARD RUBBER
EQUIPMENT FOR
REFRIGERATED
DISPLAY CABINETS
DOOR FRAMES,
SLIDE RAILS, JAMBS,
GLAZING STRIPS, etc.
STANDARD AND SPECIAL
SIZES AND DESIGNS

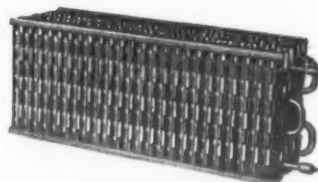
Write for information and prices to
AMERICAN HARD RUBBER CO.
13 Mercer Street New York, N. Y.
Other Sales Offices: Akron and Chicago



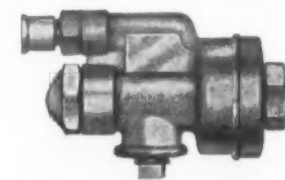
Fedders Prestalloy Dry Expansion Evaporator with Automatic Expansion Valve



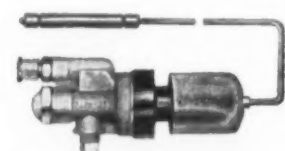
Fedders Flooded Tube Cooling Unit with Bucket Float



Fedders Non-Frost Commercial Evaporator Made in a wide variety of models



Fedders Automatic Expansion Valve



Fedders Thermostatic Expansion Valve

FEDDERS MANUFACTURING CO.
57 Tonawanda St., Buffalo, N. Y.

Kindly send me copies of your latest bulletins on:

☐ Domestic Cooling Units ☐ Commercial Evaporators ☐ Expansion Valves

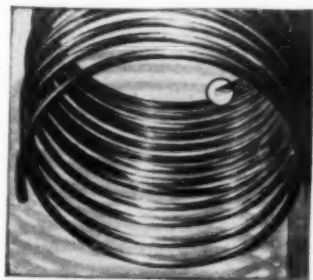
Name _____

Firm _____

Address _____

NOTE: The Fedders Manufacturing Co. has territories open for reliable Sales Representatives covering its standard electric refrigeration devices. Check if interested. ☐

French Copper Tubes in all sizes, gauges and lengths



There are French Copper Refrigeration Tubes... small diameter and thin wall seamless tubes... for every refrigeration requirement. Stock sizes are 1/4 in., 3/8 in., 7/16 in., 1/2 in., 5/8 in. and 3/4 in., all in .035 gauge. Heavier gauges can be made to order. Stock coils are 25, 50 and 100 ft. long. Other lengths can be supplied on short notice. Additional information on request. The French Manufacturing Company, General Offices: Waterbury, Connecticut.

FRENCH REFRIGERATION TUBES

Tells How To Maintain Efficiency With Commercial Machines

By Prof. H. A. Ruehe

Department of Dairy Husbandry, University of Illinois

TOO frequently plants that are having difficulty in securing sufficient refrigeration from their system blame the ice machine as the source of all the difficulty.

The machine may in itself be part or all of the trouble. However, most machines will give service if operated properly and given conditions which make for efficiency.

In many cases the owner of a plant follows false economic principles when building the coolers. A mistake is frequently made by constructing rooms with low ceilings.

It is true that height in a cooler may not seem necessary because the materials reduce the area to be cooled. Furthermore, there is some saving of insulating and other building material. Nevertheless, one must not overlook the fact that by using good ceiling heights a better circulation of air is produced.

A rapid circulation of air not only forces more uniform cooling throughout the room, but it also brings about a more rapid exchange of heat between the material to be cooled and the cooling medium. The increased wall area due to high ceilings and rapid circulation of air do tend to increase loss of refrigeration through radiation from the room. This can be taken care of by sufficient insulation.

Urges Sufficient Insulation

It is false economy to skimp on insulating material when building the rooms. There are many kinds of insulating materials. Only the best should be used, and of that a sufficient amount to insulate the room properly.

This may cause a higher initial expense, but it is more than compensated by the saving secured by preventing a continual loss of refrigeration through the walls of the room. For milk storage rooms (32° to 40° F.) at least 4 in. of pure cork board or its equivalent should be used.

For hardening rooms it is best to use 8 in. of pure cork board. It must be remembered that impregnated cork board is less efficient than pure cork and therefore a greater thickness is required.

When using granulated cork, double the thickness of the insulation, pack the cork into place, and run the insulation in the wall above the ceiling height so as to allow for settling. Brine pipes and ammonia suction lines should be insulated where they are exposed to temperatures outside of the coolers.

Do not handicap the coolers by using an insufficient amount of pipe in the expansion coils. Too frequently com-

or it may be short circuited back to the brine tank. By so doing the cooling capacity of the brine system can be greatly increased.

It must be remembered that the amount of refrigeration that can be obtained is directly proportional to the weight of refrigerant that can be evaporated in a given length of time. Increasing the length of evaporating coils will, therefore, give greater cooling capacity.

TABLE 3—HORSE POWER PER TON OF REFRIGERATION, VERTICAL SINGLE ACTING COMPRESSOR

Condensing pressure (high pressure) lbs.	10 lbs. H.P.	20 lbs. H.P.	30 lbs. H.P.
105	1.09	0.80	0.60
125	1.25	0.935	0.72
145	1.40	1.065	0.844
165	1.56	1.201	0.965
185	1.72	1.336	1.085
205	1.879	1.470	1.203
225	2.05	1.609	1.33

Occasionally the expansion coils in the hardening rooms may be flooded with liquid ammonia. Although operating with a wet gas will give greater cooling efficiency to the coils, when the coils become flooded this condition may hinder evaporation and thereby greatly reduce the efficiency of the coil.

It is impossible to secure low temperatures when carrying a high suction pressure. Therefore, it is necessary to adjust the suction pressure somewhat in accordance with the temperature desired.

Increasing Suction Pressure

It is true that by increasing the suction pressure the capacity of the compressor can be increased since the density of the gas is increased, and therefore, more gas by weight is handled with each stroke of the piston.

However, one must remember that increasing the pressure raises the boiling point of the refrigerant and therefore the temperature to which a room can be cooled is higher than is the case when operating with a lower pressure.

Table 1, directly below illustrates the principle when operating an ammonia compressor.

TABLE 1—RELATION OF SUCTION PRESSURES TO COOLING TEMPERATURES AND MACHINE CAPACITY

Lowest temp. to be maintained, degrees F.	Approximate temp. of suction gas	Suction pressure lbs.	Cylinder capacity required per minute for one ton refrigeration (cooling water at 70° F.)
-5	-17	5	10,700 cubic inches
0	-8	10	9,000 " "
10	0	15	7,500 " "
15	6	20	6,000 " "
20	11	25	5,400 " "
25	17	30	4,800 " "

*Add or deduct 1 per cent to cylinder capacity for each degree in temperature for water above or below 70° F.

petition forces a refrigerating concern to base its bids on the minimum amount of piping that can be used to give normal capacity to the room.

During the peak of the season, the rooms may lack refrigerating capacity which will handicap business operations.

Placing Coils or Brine Tank

The cooling coils or brine tank must be properly placed so as to cool the room efficiently. Placing the cooling coils or tank so as to obtain the maximum circulation by convectional currents is necessary; and furthermore, provision must be made for the travel of both the warm and cold air.

Circulating fans may be placed in rooms so as to give greater capacity to the rooms. These are helpful in hardening rooms during the peak seasons.

At times there may be some difficulty in maintaining temperatures in milk rooms equipped with direct expansion. By installing brine jackets on some of the coils, it is possible to store refrigeration and thus maintain temperatures.

In some cases the brine tanks are too small for the capacity required or else there is an insufficient amount of expansion pipe in the brine tank. This can be remedied by installing a brine

To get the most capacity from the machine, operate with as high a suction pressure as is consistent with the temperature desired.

Since the capacity of the compressor is proportional to the amount of gas (by weight), that the machine can handle per stroke of the piston, speeding up the compressor (other things being equal) will increase its capacity. Slowing down the compressor will decrease its capacity.

Rapid Brine Circulation

When cooling with brine, the temperature of the brine is important, but the volume of brine circulated per minute is also important. Under most conditions it is best to circulate the brine rapidly enough to keep the temperatures of the brine at the intake and discharge within a difference of 8° to 10° F.

The colder the brine is to be cooled, the stronger must be the brine solution in order to prevent freezing. However, it must be remembered that the stronger the brine the lower its specific heat and consequently the less refrigeration each gallon of brine can carry.

Table 2, which follows below, brings out these points.

TABLE 2—PHYSICAL PROPERTIES OF CALCIUM CHLORIDE BRINE

Percent calcium chloride	Specific gravity of brine	Salometer reading at 60° F.	Freezing point of brine	Specific heat of brine
12.5	1.107	56	17.0	.823
18.1	1.160	80	2.5	.757
23.2	1.208	100	-12.0	.70
25.5	1.229	108	-22.0	.67

cooler, either the shell or double pipe type.

Brine can be circulated from the cooler directly to the vat or milk cooler,

In order to obtain the greatest efficiency it is desirable to avoid having the brine stronger than necessary, although it is necessary to have the brine

at such a strength that the freezing point is at least 5° below the lowest temperature that the brine is to be cooled. If the cooling of the brine is not kept under control, it is well to have a safety factor of at least 10°.

Brine will sometimes become acid and attack metals. In order to keep brine alkaline it is well to keep a small amount of air slacked lime suspended in the brine tank.

The temperature and amount of cooling water used have direct effects upon the efficiency of the refrigerating unit. When an abundance of cold water is available, a considerable saving can be made in power.

Economy of Water

On the other hand, when water is scarce, it may be economy to use less water even though it requires more power.

The colder the cooling water, the lower the pressure on the "high side" of the machine and the less power required to operate the compressor.

The saving in power that can be made by operating with various suction pressures and condensing pressures (high pressure) is illustrated in the following data, Table 3.

The liquid receiver should be located in a cool place. This will help to reduce the pressure and save power. The receiver should never be located in the boiler room.

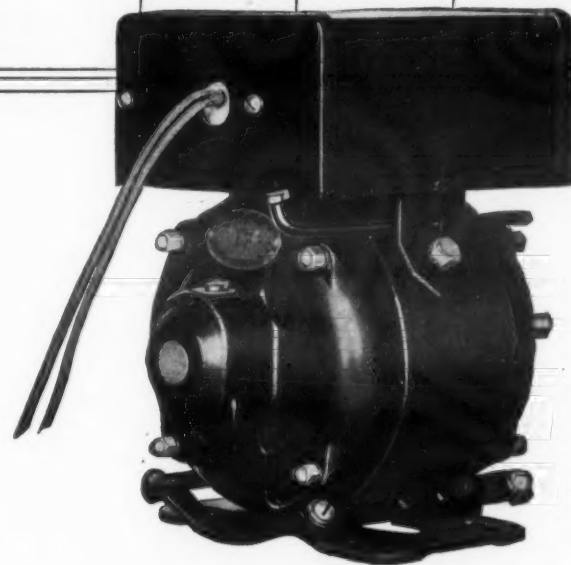
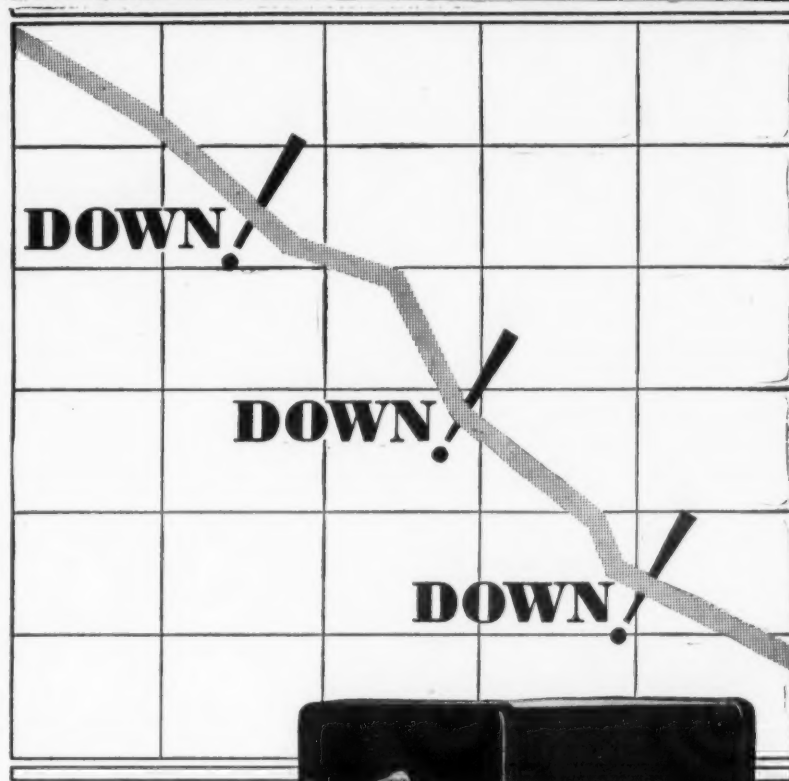
Use of a Cooling Tower

Water may be a large item in the operating expense. In many cases a cooling tower can be used to advantage. By this means the discharge water from the condenser can be cooled and reused. Spray nozzles may be installed on the roofs of some plants for the purpose of cooling water. This may be considerably cheaper than building a cooling tower, and may serve the same purpose.

The oil trap should be emptied frequently enough to avoid all chance of oil being carried over into the condensing and expansion coils. Oil in the expansion coils may interfere with ammonia circulation and hence cut down the cooling efficiency of the coils.

The refrigeration system should be free from air. It is desirable to purge the system occasionally in order to release any air that may accumulate in the condenser. Air will increase the condensing pressure, hence use more power, and it may also cut down on the efficiency of the condenser.

GE TYPE KC



go your service problems

WITH the Type KC "care-free" capacitor-motor in your 1932-model refrigerator, the graph of your service complaints approaches zero. The enviable reputation of this motor is attested by the many manufacturers who have adopted it.

The "care-free" motor, because of extreme simplicity of design, is unusually dependable. Its long life is the result of minimized points of wear.

Give your new design every asset — every sales appeal; specify Type KC, the "care-free" motor.

99.5% + Pure!

Artic

(R&H Methyl Chloride)

THE IDEAL REFRIGERANT...

for

Multiple Unit Systems
Household Units
Water Coolers
Frozen Food Cabinets

Ice Cream Cabinets
Baking Industry
Candy Making
Dairy Products

Air Conditioning
Fur Storage
Flower Storage

Motor Truck Refrigeration
Refrigerator Cars
and
Other Commercial Purposes

Shipped in 60, 90 and 130 lb. cylinders, multi-unit tank cars of 18,000 lbs. capacity and single unit tank cars of 19,500 lbs. capacity.

Copies of the ARTIC SERVICE MANUAL and the booklet, "ARTIC—The Refrigerant" will be sent at your request.

ROESSLER & HASSLACHER CHEMICAL COMPANY
Incorporated
Empire State Bldg.
350 Fifth Avenue New York, N.Y.

GENERAL  ELECTRIC

210-152

Westinghouse, Universal and Williams Specifications

Westinghouse

WESTINGHOUSE ELEC. & MFG. CO.
Mansfield, Ohio

Model or Catalog No.	AL-30	AL-45	AP-45	AL-73	AP-73	AL-90	AP-90	AP-130	AP-200
CABINET SPECIFICATIONS									
Overall dimensions, including hardware	42	55 1/4	55 1/4	59 1/4	59 1/4	59 1/4	59 1/4	60	76
Height (inches)	24	24 1/4	24 1/4	24 1/4	31 1/4	31 1/4	39 1/4	50 1/4	51 1/4
Width (inches)	19 1/4	20 3/4	24	22 1/4	22 1/4	22 1/4	22 1/4	27 1/4	27 1/4
Depth (inches)	19 1/4	20 3/4	24	22 1/4	22 1/4	22 1/4	22 1/4	27 1/4	27 1/4
Thickness of insulation	2	3	3	4	4	4	4	2 1/4	4
Top of cabinet (inches)	2	2 1/4	2 1/4	3	3	3 1/4	3 1/4	2 1/4	4 1/4
Sides of cabinet (inches)	2	2 1/4	2 1/4	3	3	3 1/4	3 1/4	2 1/4	4 1/4
Bottom of cabinet (inches)	2	2 1/4	2 1/4	3	3	3 1/4	3 1/4	2 1/4	4 1/4
Inside dimensions of cabinet liner									
Height (inches)	19 1/4	29 1/4	29 1/4	32 1/4	32 1/4	32	32	29 1/4	50 1/4
Width (inches)	18 1/4	17 1/4	17 1/4	25	25	31 1/4	31 1/4	43 1/4	40 1/4
Depth (inches)	15 1/4	15 1/4	15 1/4	16 1/4	16 1/4	16 1/4	16 1/4	19 1/4	18 1/4
Thickness of exterior metal (gauge)	18	18	20	18	20	18	20	20	20
Thickness of interior metal (gauge)	1	1	1	1	1	2	2	2	4
Number of refrigerator doors	1	1	1	1	1	2	2	2	4
STORAGE CAPACITY									
Gross food storage capacity (cu. ft.)	3.1	4.7	4.7	7.6	7.6	9.3	9.3	15.3	21.8
Net food storage (cu. ft.) (Nema rating)	2.6	4.2	4.2	7.2	7.2	9	9	13.5	20.1
Number of shelves	2	3	3	3	3	6	6	5	11
Total shelf area (sq. ft.) (Nema rating)	5.3	8.4	8.4	12.8	12.8	15.7	15.7	24.8	37.7
Greatest distance between any two shelves	5	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	6	5 1/4
Shortest distance between any two shelves	5	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	6	5 1/4
ICE CUBE TRAYS									
Number of ice cube trays	2	3	3	3	3	3	3	7	7
Inside dimensions of trays (inches)									
Length (at top of tray)	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4
Width (at top of tray)	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4
Depth (shallow tray)	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4
Depth (deep tray)	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4
Number of cubes produced at one freezing	36	54	54	96	96	96	96	192	192
Weight of ice cubes produced (lbs.)	3 1/2	5 1/4	5 1/4	11	11	11	11	21	21
COMPRESSOR SPECIFICATIONS									
Compressor capacity (lbs.) (ASRE rating)	1-8	1-8	1-8	1-8	1-8	1-8	1-8	1-4	1-4
Motor size (hp.)	1-8	1-8	1-8	1-8	1-8	1-8	1-8	1-4	1-4
Quantity of refrigerant in system (lbs.)	2 lbs.	2 lbs.	2 lbs.	2 lbs.	2 lbs.	2 lbs.	2 lbs.	2 lbs.	2 lbs.
Quantity of lubricant in system	2 lbs.	2 lbs.	2 lbs.	2 lbs.	2 lbs.	2 lbs.	2 lbs.	2 lbs.	2 lbs.
WEIGHT									
Net weight of complete refrigerator (lbs.)	242	278	278	430	430	458	458	600	744
Total shipping weight (lbs.)	315	361	361	534	534	569	569	875	744
PRICE									
F. o. b. factory price	\$149.50	165.00	195.00	236.00	275.00	300.00	340.00	470.00	650.00
Retail price, without installation									
Installed price									

CABINET MATERIALS

Make of cabinet	Westinghouse
Material used for exterior	AL models—furniture metal; AP models—Armco
Material used for frame	Steel
Make of interior metal	Armco
Finish of shelves	Tinned

INSULATION

Make of insulation	Balsam Wool and Celotex
Nature of insulating material	Vegetable
Bulk or formed slabs	Formed slabs

FINISH

Cabinet finish (exterior)	AL models—lacquer; AP models—porcelain
Make of exterior finish	Colors offered as standard—White
Colors offered on special order	Porcelain
Cabinet finish (interior)	Porcelain
Make of interior finish	

HARDWARE

Make of hardware	National Lock
Process of manufacture	Stamped
Basic metal of hardware	Brass
Finish of hardware	Chromium

DOORS

Material used for breaker strip	Micarta
Material used for gasket	Rubber
Make or brand of gasket	

EVAPORATOR

Make of evaporator	Westinghouse
Evaporator construction	Shell
Material used for evaporator	Porcelain on steel
Type of refrigerant control	High side float
Make of expansion valve	None
Make of brine tank	None
Solution used for brine	None
Type and make of trays	Models AL-30, AL-45 and AP-45—aluminum; others—aluminum and Flexotray

SPECIAL FEATURES

AP models except AP-45—interior light	
AP models except AP-45—vegetable tray	

COMPRESSOR

Make of compressor	Westinghouse
Type of system	Hermetic
Type of compressor	Reciprocating
Compressor drive	Direct
Type and make of shaft seal	None
Location of compressor	Above

CONDENSER

Make of condenser	Westinghouse
Fan or natural draft cooling	Fan
Type of condenser	Finned tube

REFRIGERANT

Refrigerant used	Sulphur Dioxide
Trade name	
Chemical formula	SO ₂

LUBRICATION

Make of compressor lubricant	Standard Oil
When should motor be oiled	Never

MOTOR

Make of motor	Westinghouse
Type of motor	Split phase
Method of starting	Unloader
How adapted to odd frequency	Transformer for 25-cycle
What additional cost is entailed	None
How adapted to direct current	Converter
What additional cost is entailed	None

CONTROL

Make of control	Westinghouse
Type of control	Temperature
Temperature regulation method	Manual regulator
Make of overload cut-out	Westinghouse Dual-Auto-matic
How is defrosting accomplished	Shut down unit

POLICY

Who determines retail price	Manufacturer
Guarantee period on cabinet	Two years
Guarantee period on system	Two years
By whom serviced	Factory
Are replacement parts sold to independent service companies	No

Universal Cooler

UNIVERSAL COOLER CORP.
7424 Melville Ave., Detroit

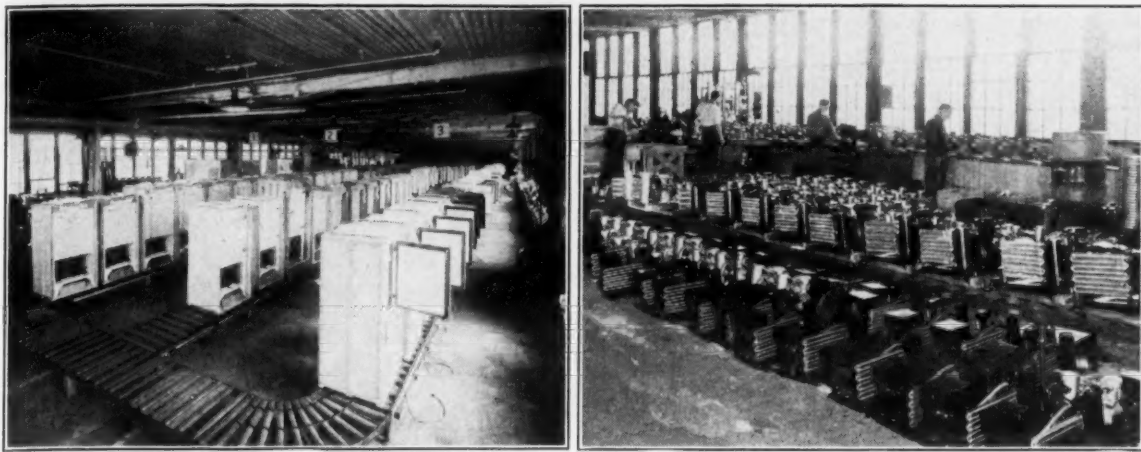
Model or Catalog No.	L-32	L-452	L-552	L-652	L-82	P-552	P-652	P-82
CABINET SPECIFICATIONS								
Overall dimensions, including hardware	50	55	58 1/2	61 1/2	63 1/2	58 1/2	61 1/2	63 1/2
Height (inches)	20 1/4	26 1/4	28 1/4	32	36 1/4	28 1/4	32	36 1/4
Width (inches)	21 1/4	23 1/4	23 1/4	26 1/4	25 1/4	23 1/4	26 1/4	25 1/4
Depth (inches)	21 1/4	23 1/4	23 1/4	26 1/4	25 1/4	23 1/4	26 1/4	25 1/4
Thickness of insulation	2 1/2	3	3	3 1/4	3	3	3 1/4	3
Top of cabinet (inches)	2 1/2	3	3	3 1/4	3	3	3 1/4	3
Sides of cabinet (inches)	2 1/2	3	3	3 1/4	3	3	3 1/4	3
Bottom of cabinet (inches)	2 1/2	3	3	3 1/4	3	3	3 1/4	3
Inside dimensions of cabinet liner								
Height (inches)	25	27 1/4	28	30	33	28	30	33
Width (inches)	16	19 1/4	21 1/4	24	29	21 1/4	24	29
Depth (inches)	15 1/4	16	17 1/4	18 1/4	17 1/4	18 1/4	17 1/4	17 1/4
Thickness of exterior metal (gauge)								
Thickness of interior metal (gauge)								
Number of refrigerator doors	1	1	1	1	2	1	1	2
STORAGE CAPACITY								
Gross food storage capacity (cu. ft.)	3.59	4.92	6.1	7.71	9.82	6.1	7.71	9.82
Net food storage (cu. ft.) (Nema rating)	3.16	4.06	4.87	6.17	7.90	4.87	6.17	7.90
Number of shelves	3	5	5	5	5	5	5	5
Total shelf area (sq. ft.) (Nema rating)	5.86	8.81	11.22	13.43	14.11	11.22	13.43	14.11
Greatest distance between any two shelves	6 1/4	6 1/4	6 1/4	6 1/4	6 1/4	6 1/4	6 1/4	6 1/4
Shortest distance between any two shelves	5 1/4	5	5	5 1/4	5	5	5 1/4	5
ICE CUBE TRAYS								
Number of ice cube trays	2	2	3	4	5	3	4	5
Inside dimensions of trays (inches)								
Length (at top of tray)	8	9 1/4	9 1/4	9 1/4	9 1/4	9 1/4	9 1/4	9 1/4
Width (at top of tray)	3 1/4	5 1/4	5 1/4	5 1/4	5 1/4	5 1/4	5 1/4	5 1/4
Depth	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4
Number of cubes produced at one freezing	36	56	84	112	140	84	112	140
Weight of ice cubes produced (lbs.)	2	4	6	8	10	6	8	10
COMPRESSOR SPECIFICATIONS								
Compressor capacity (lbs.) (ASRE rating)	120	120	120	120	120	120	120	120
Motor size (hp.)	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6
Quantity of refrigerant in system (lbs.)	1	1	1	1	1	1	1	1
Quantity of lubricant in system	1/2 pt.	1/2 pt.	1/2 pt.	1/2 pt.	1/2 pt.	1/2 pt.	1/2 pt.	1/2 pt.
WEIGHT								
Net weight of complete refrigerator (lbs.)	189	265	290	350	430	325	400	500
Total shipping weight (lbs.)								
PRICE								
F. o. b. factory price	\$160	165	180	220	290	200	240	310
Retail price, without installation								
Installed price								

Ice-O-Matic

WILLIAMS OIL-O-MATIC HEATING CORP.
Bloomington, Ill.

Model or Catalog No.	L-40	L-50	L-50T	P-50	L-60	L-60T	P-60	P-61
CABINET SPECIFICATIONS								
Overall dimensions, including hardware	55½	59½	47	59½	61	49	61	59
Height (inches)	24	26	26	26	28½	28½	28½	35
Width (inches)	23¼	24¼	24¼	24¼	26	26	26	28
Depth (inches)	23¼	24¼	24¼	24¼	26	26	26	28
Thickness of insulation	2	2¼	2¼	2¼	3	3	3	3
Top of cabinet (inches)	2	2¼	2¼	2¼	3	3	3	3
Sides of cabinet (inches)	2	2¼	2¼	2¼	3	3	3	3
Bottom of cabinet (inches)	2	2¼	2¼	2¼	3	3	3	3
Inside dimensions of cabinet liner								
Height (inches)	26¼	29¼	29¼	29¼	31¼	31¼	31¼	30
Width (inches)	19	20¼	20¼	20¼	22	22	22	28
Depth (inches)	15½	16¾	16¾	16¾	17¾	17¾	17¾	17¾
Thickness of exterior metal (gauge)	22	22	22	22	22	22	22	22
Thickness of interior metal (gauge)	20	20	20	20	20	20	20	20
Number of refrigerator doors	1	1	1	1	1	1	1	2
STORAGE CAPACITY								
Gross food storage capacity (cu. ft.)	4.5	5.9	5.9	5.9	7.0	7.0	7.0	8.7
Net food storage (cu. ft.) (Nema rating)	4.0	5.3	5.3	5.3	6.4	6.4	6.4	7.8
Number of shelves	3	4	4	4	4	4	4	5
Total shelf area (sq. ft.) (Nema rating)	7.7	10.0	10.0	10.0	11.8	11.8	11.8	11.8
Greatest distance between any two shelves	6¼	6¼	6¼	6¼	7¼	7¼	7¼	10
Shortest distance between any two shelves	5¼	5¼	5½	5½	5¼	5¼	5¼	5
ICE CUBE TRAYS								
Number of ice cube trays	3	4	4	4	4	4	4	4
Inside dimensions of trays (inches)								
Length (at top of tray)	8¾	8¾	8¾	10¼	10¼	10¼	10¼	10
Width (at top of tray)	3¾	3¾	3¾	3¾	3¾	3¾	3¾	4½
Depth	1¼	1¼	1¼	1¼	1¼	1¼	1¼	1¼
Number of cubes produced at one freezing	54	72	72	72	84	84	84	84
Weight of ice cubes produced (lbs.)	3¾	5	5	5	5½	5½	5½	5½
COMPRESSOR SPECIFICATIONS								
Compressor capacity (lbs.) (ASRE rating)	64	64	64	64	64	64	64	64
Motor size (hp.)	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6
Quantity of refrigerant in system (lbs.)	3.2	3.5	3.5	3.5	3.3	3.3	3.3	4.1
Quantity of lubricant in system	3 pts.	3 pts.	3 pts.	3 pts.	3 pts.	3 pts.	3 pts.	3 pts.
WEIGHT								
Net weight of complete refrigerator (lbs.)	405	450	465	470	487	495	500	560
Total shipping weight (lbs.)	445	500	515	520	537	545	550	610
PRICE								
F. o. b. factory price	\$169.50	\$197.00	\$185.00	\$215.00	\$232.00	\$220.00	\$250.00	\$305.00
Retail price, without installation	\$169.50	\$197.00	\$185.00	\$215.00	\$232.00	\$220.00	\$250.00	\$305.00
Installed price	Depending upon location							

Production Lines in the Busy Apex Plants



Left: assembly line in Plant No. 7 of the Apex Electrical Mfg. Co. at Painesville, Ohio. Right: compressor manufacture in the Apex Plant No. 4 in Cleveland. Apex has stepped up refrigerator production to 24 hours a day.

DETROIT FIRM ASSUMES HUMIDIFIER DISTRIBUTION

DETROIT—A new company, the Automatic Humidifier Sales Co., has been organized in Detroit to take over the distribution of products of the Automatic Humidifier Co., Cedar Falls, Iowa. K. M. Schaefer of Detroit has been made president. He was general sales manager of Norge Corp. during its first three years.

Automatic Humidifier Sales Co. features two products, the automatic drip humidifier called "Humidrip," for use in warm air furnaces, and a newer device called the "Heatset."

BALTIMORE RESTAURANT TO BE CONDITIONED

BALTIMORE—Maxim's restaurant here is being provided with Frigidaire air conditioners. The installation is to be made this month.

It is planned to install four units, two to be H or horizontal types, and two V or verticals.

SHIPS TO ORIENT ADDING REFRIGERATOR SERVICE

BERKELEY, Calif.—The Oceanic and Oriental Navigation Co. has inaugurated a monthly refrigerated cargo service from San Francisco Bay and other Pacific Coast ports to the Orient.

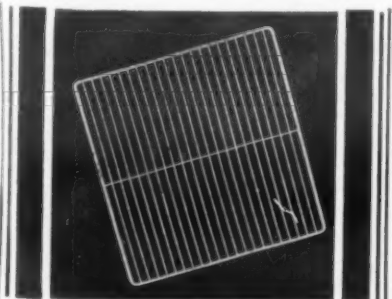
SPECIALIZING in REFRIGERATION CASTINGS made of ELECTRIC FURNACE IRON or SEMI-STEEL and GREY IRON ALLOYS

The Superior Foundry Co.
Cleveland, O.
Metallurgical Advice Gratis

Service Electric Refrigerators!

Become the refrigerator serviceman in your neighborhood—repair any electric refrigerator, and make extra dollars. The OFFICIAL REFRIGERATION SERVICE MANUAL gives complete, comprehensive service data for servicing all types of electric refrigerators. Illustrated with tools, charts and detailed diagrams. 352 pages, over 1,000 diagrams, 9x12 inches. Bound in flexible, loose-leaf leatherette binder. \$5.00 postpaid.

GERNSBACK PUBLICATIONS, Inc.
98ER Park Place New York, N.Y.



REFRIGERATOR SHELVES

Highest quality shelves of any desired style or type. We have an experienced engineering department ready to assist in working out your shelf problems. Any order, large or small, given personal attention.

Quality and Service emphasized
United Steel & Wire Co.
Department 12
Battle Creek, Mich. Atchison, Kan.
Two shipping points

Larkin-Warren Announces New Ice Maker Producing 1980 Cubes

ATLANTA—Larkin-Warren Refrigerating Corp. of this city, maker of Larkin coils, has just announced a new Larkin Cube Maker capable of producing 252 lbs. of ice, or 1,980 large-size

Lots of Ice Cubes



Larkin-Warren's new Cube Maker produces 1,980 ice cubes in one freezing.

ice cubes, in 24 hours when operated with 1/2-hp. condensing unit. Freezing 60 lbs. of ice, or 432 large cubes, in 18 trays at one time, the Larkin Cube Maker has three additional trays with a storage capacity of 30 lbs.

LITERATURE OF MANUFACTURERS

Catalogues, bulletins and other materials recently issued. Manufacturers are requested to send copies of new trade literature to Electric Refrigeration News.

Fedders Evaporators

A four-page folder just published describes the Fedders "Prestalloy" dry expansion evaporator for domestic refrigerators. Specifications and dimensions are illustrated by drawings. The back page shows the Fedders expansion valve.

Service Supplies

The 1932 catalog of refrigeration service supplies put out by the Home Appliance Service Co., Greensboro, N. C., has been received. Parts for various makes of refrigerators, tubing, motor brushes, valves, gauges, motor bearings, etc., are illustrated, and specifications given. Prices are given f. o. b. Greensboro.

Parker Equipment

The Parker Appliance Co., Cleveland, has issued a bulletin showing in colors its lines of couplings, inner-seal fittings, copper plumbing, etc. Descriptions of the products are given in this bulletin, which is No. 39; complete specifications and prices are given in their bulletin No. 34.

Brazing Alloy

Handy & Harman now has available a folder on "Sil-Fos," recognized by the U. S. Patent Office as the first brazing alloy containing phosphorus in combination with silver and copper. Characteristics of the alloy are given, and a page is devoted to typical uses of Sil-Fos.

AIR WASHER DESIGNED BY SWARTZBAUGH CO.

TOLEDO—Swartzbaugh Mfg. Co., here, maker of "Everhot" electric cookers, has just introduced a portable air washing fan.

"Klenzair," as the new appliance is called, draws the air from the room, washes it through four sprays of water, and releases it into the atmosphere.

It operates on 110 volts, drawing about 44 watts, the announcement states. It has a capacity of 1,000 cu. ft. of air every 10 minutes.

The body is made of rust-resisting steel. The upper structure is enameled with a grain walnut finish. The lower structure has a lacquer finish in walnut color. The hardware is chromium plated. The spray discs are of Monel.

The motor has a two-speed switch.

Klenzair stands 40 in. high. The base is 15 1/4 in. in diameter. Net weight is 22 lbs. It is shipped knocked down; packed and ready for shipping it weighs 32 lbs. The list price, \$35 east of Denver; \$37.50 in the West.

APEX INTRODUCES TWO NEW LOW-PRICED MODELS

CLEVELAND—Retail outlets handling the regular de luxe refrigerators of the Apex Rotarex Corp., merchandising organization of the Apex Electrical Mfg. Co., are introducing two new low-priced refrigerators, according to R. J. Strittmatter, vice president in charge of sales. Rated at 4- and 6-cu. ft. capacity, the new models sell for \$119.50 and \$149.50, respectively.



BAKELITE MOLDED PARTS FOR ELECTRIC REFRIGERATORS

Our Engineering Department will cooperate with you in the design of molded parts. Send for Catalog No. 101

CHICAGO MOLDED PRODUCTS CORP.

2155 Walnut St.

Chicago, U. S. A.

RECOGNIZED BEST BY DEMAND

ANSUL SULPHUR DIOXIDE

The refrigerator manufacturer, the refrigeration engineer, and the service man all acknowledge the quality and dependability of Ansul Sulphur Dioxide. Why? Because it contains a minimum of moisture, can be charged directly into refrigeration units and is reasonable in cost. Further, each container is accompanied by a guaranteed analysis assuring highest quality at all times.

You, too, will find it advantageous to standardize on Ansul Sulphur Dioxide. Let the experience of the manufacturers of America's finest automatic refrigerators be your guide in the choice of a refrigerating gas.

Ansul Sulphur Dioxide may be obtained in nine sizes of cylinders ranging in capacity from 2 to 150 pounds, and in ton drums and tank cars. Warehouse stocks are available in thirty-five cities for convenient distribution or emergency requirements.

A brochure listing the warehouse locations and complete prices will be sent upon request.

ANSUL CHEMICAL CO.
MARINETTE, WISCONSIN



Trukold, Norge, Keokuk and Zerozone Specifications

Trukold MONTGOMERY WARD CO. Chicago							Norge NORGE CORP. Detroit							Keokuk KEOKUK REFRIGERATING CO. Keokuk, Iowa					Zerozone ZEROZONE CORP. 939 E. 95th St., Chicago						
Model or Catalog No.	LW-30	LW-40	LW-55	PW-40	PW-55	PW-75	A	B	BP	D	DP	F	H	LT-4	LT-6	LT-8	PT-6	PT-8	405	505	556	708	758		
CABINET SPECIFICATIONS																									
Overall dimensions, including hardware	45	52 1/4	55	57 3/4	52 1/4	55	57 3/4	51 1/4	53 1/4	53 1/4	61 1/4	61 1/4	62 3/4	68 1/4	55 3/4	60 3/4	59 3/4	60 3/4	59 3/4	52	55 1/4	59 3/4	61 1/4	62 1/4	
Height (inches)	23 3/4	23 3/4	28 3/4	34 1/4	23 3/4	28 3/4	34 1/4	25 1/4	25 1/4	25 1/4	28 3/4	28 3/4	32 3/4	42 1/4	24 3/4	28 3/4	32 3/4	28 3/4	32 3/4	24 1/4	25	26	31 1/4	35 1/4	
Width (inches)	27 3/4	27 3/4	27 3/4	28 3/4	27 3/4	27 3/4	28 3/4	23 3/4	24 1/4	24 1/4	25 1/4	25 1/4	27 1/4	27 1/4	25 3/4	25 3/4	27	25 3/4	27	22 1/4	22 3/4	23 3/4	24 3/4	28 3/4	
Depth (inches)	27 3/4	27 3/4	27 3/4	28 3/4	27 3/4	27 3/4	28 3/4	23 3/4	24 1/4	24 1/4	25 1/4	25 1/4	27 1/4	27 1/4	25 3/4	25 3/4	27	25 3/4	27	22 1/4	22 3/4	23 3/4	24 3/4	28 3/4	
Thickness of insulation	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Top of cabinet (inches)	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Sides of cabinet (inches)	3	3	3	3 1/2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
Bottom of cabinet (inches)	3 1/2	3 1/2	3 1/2	3 1/2	3 1/2	3 1/2	3 1/2	3 1/2	3 1/2	3 1/2	3 1/2	3 1/2	3 1/2	3 1/2	3 1/2	3 1/2	3 1/2	3 1/2	3 1/2	3 1/2	3 1/2	3 1/2	3 1/2	3 1/2	
Inside dimensions of cabinet liner	20	27 1/4	30	32 3/4	27 1/4	30	32 3/4	26 3/4	26 3/4	26 3/4	31 1/4	31 1/4	31 1/4	36	25 3/4	30	29 1/4	30	29 1/4	25	26	29	30	30	
Height (inches)	17 3/4	17 3/4	21 3/4	26 3/4	17 3/4	21 3/4	26 3/4	16 3/4	16 3/4	16 3/4	21 3/4	21 3/4	24 3/4	34	18	21 3/4	25 3/4	21 3/4	25 3/4	19 1/2	20	20	24 1/2	26 1/2	
Width (inches)	17 3/4	17 3/4	21 3/4	26 3/4	17 3/4	21 3/4	26 3/4	16 3/4	16 3/4	16 3/4	21 3/4	21 3/4	24 3/4	34	18	21 3/4	25 3/4	21 3/4	25 3/4	19 1/2	20	20	24 1/2	26 1/2	
Depth (inches)	17	17	17	17	17	17	17	17	17	17	17	17	18	18	18	18	18	18	18	19 1/2	19 1/2	19 1/2	19 1/2	19 1/2	
Thickness of exterior metal (gauge)	20	20	20	20	20	20	20	20	20	20	20	20	20	20	19	19	19	19	19	22	22	22	22	22	
Thickness of interior metal (gauge)	19	19	19	19	19	19	19	19	19	19	19	19	19	19	18	18	18	18	18	20	20	20	20	20	
Number of refrigerator doors	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	2	1	1	1	1	1	1	1	2	
STORAGE CAPACITY																									
Gross food storage capacity (cu. ft.)	3.5	4.80	6.57	8.72	4.8	6.57	8.72	5.34	5.34	5.34	6.88	6.88	8.08	12.83	5.1	6.7	8.4	6.7	8.4	4.4	4.6	5.1	6.8	7.5	
Net food storage capacity (cu. ft.) (Nema rating)	3.0	4.19	5.78	7.85	4.19	5.78	7.85	4.25	4.25	4.25	5.6	5.6	6.8	11.1	4.5	6.0	7.6	6.0	7.6	3.8	4.0	4.6	6.0	6.8	
Number of shelves	2	3	4	4	3	4	4	3	3	3	3	3	4	4	3	4	4	4	4	3	4	4	4	4	
Total shelf area (sq. ft.) (Nema rating)	6.3	7.38	9.38	14.08	7.38	9.38	14.08	9.2	9.6	9.6	12.3	12.3	14.3	20.95	8.5	9.8	11.5	9.8	11.5	7.0	8.0	8.75	10.5	12.0	
Greatest distance between any two shelves	12	14 1/4	13 3/4	14 1/4	14 1/4	13 3/4	14 1/4	12 3/4	13 3/4	13 3/4	14 1/4	14 1/4	15 3/4	18	12 3/4	15 3/4	13 3/4	15 3/4	13 3/4	12	12	13	13 3/4	13 3/4	
Shortest distance between any two shelves	..	6 1/2	6	6 1/2	6 1/2	6	6 1/2	6 1/2	6 1/2	6 1/2	6 1/2	6 1/2	6 1/2	6 1/2	6 1/2	6 1/2	6 1/2	6 1/2	6 1/2	4	4 1/4	4	4	4 1/4	
ICE CUBE TRAYS																									
Number of ice cube trays	2	3	5	6	3	5	6	3	3	3	5	5	5	8	2	3	5	3	5	2	2	3	3	3	
Inside dimensions of trays (inches)																									
Length (at top of tray)	10 1/4	10 1/4	10 1/4	10 1/4	10 1/4	10 1/4	10 1/4	6 3/4	6 3/4	6 3/4	9 3/4	9 3/4	9 3/4	10 3/4	6 3/4	6 3/4	6 3/4	6 3/4	6 3/4	9 1/2	9 1/2	9 1/2	10 1/2	10 1/2	
Width (at top of tray)	3 3/4	3 3/4	3 3/4	3 3/4	3 3/4	3 3/4	3 3/4	3 3/4	3 3/4	3 3/4	3 3/4	3 3/4	3 3/4	4 1/4	3 3/4	3 3/4	3 3/4	3 3/4	3 3/4	3 3/4	3 3/4	3 3/4	3 3/4	3 3/4	
Depth	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	
Number of cubes produced at one freezing	42	63	105	126	63	105	126	63	63	63	105	105	105	168	36	54	90	54	90	42	42	63	63	63	
Weight of ice cubes produced (lbs.)	2 1/2	3 3/4	6 1/4	7 1/2	3 3/4	6 1/4	7 1/2	3 3/4	3 3/4	3 3/4	6 1/4	6 1/4	6 1/4	10 1/4	4	6	10	6	10	4	4	6	7 1/2	7 1/2	
COMPRESSOR SPECIFICATIONS																									
Compressor capacity (lbs.) (ASRE rating)	61	61	61	61	61	61	61	1-5	1-5	1-5	1-5	1-5	1-5	1-6	110	134	134	134	134	69	86	86	86	86	
Motor size (hp.)	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-6	1-6	1-6	1-6	1-6	1-6	1-8	1-6	1-6	1-6	1-6	
Quantity of refrigerant in system (lbs.)	25 oz.	25 oz.	25 oz.	25 oz.	25 oz.	25 oz.	25 oz.	5	5	5	5	5	5	5	2	2 1/2	2 1/2	2 1/2	2 1/2	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	
Quantity of lubricant in system	14 oz.	14 oz.	14 oz.	14 oz.	14 oz.	14 oz.	14 oz.	..	..	..	..	..	..	..	..	..	..	..	..	1 pt.	1 pt.	1 pt.	1 pt.	1 pt.
WEIGHT																									
Net weight of complete refrigerator (lbs.)	315	386	409	487	315	386	409	345	356	377	445	462	537	767	..	..	..	..	..	279	291	320	401	463
Total shipping weight (lbs.)	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	325	340	370	460	538
PRICE																									
F. o. b. factory price	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Retail price, without installation	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Installed price	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
CABINET MATERIALS																									
Make of cabinet	Gibson	Gibson	Gibson	Gibson	Gibson	Gibson	Gibson	Norge	Norge	Norge	Norge	Norge	Norge	Norge	LT models—Cabranelle & Gurney; PT models—Eagle Metal	LT models—Cabranelle & Gurney; PT models—Eagle Metal	LT models—Cabranelle & Gurney; PT models—Eagle Metal	LT models—Cabranelle & Gurney; PT models—Eagle Metal	LT models—Cabranelle & Gurney; PT models—Eagle Metal	Metal	Metal	Metal	Metal	Metal	
Material used for exterior	Metal	Metal	Metal	Metal	Metal	Metal	Metal	Steel	Steel	Steel	Steel	Steel	Steel	Steel	Wood	Wood	Wood	Wood	Wood	Wood	Wood	Wood	Wood	Wood	
Make of exterior metal	Armco	Armco	Armco	Armco	Armco	Armco	Armco	Steel	Steel	Steel	Steel	Steel	Steel	Steel	Wood	Wood	Wood	Wood	Wood	Wood	Wood	Wood	Wood	Wood	
Material used for frame	Steel	Steel	Steel	Steel	Steel	Steel	Steel	Steel	Steel	Steel	Steel	Steel	Steel	Steel	Wood	Wood	Wood	Wood	Wood	Wood	Wood	Wood	Wood	Wood	
Make of interior metal	Armco	Armco	Armco	Armco	Armco	Armco	Armco	Steel	Steel	Steel	Steel	Steel	Steel	Steel	Wood	Wood	Wood	Wood	Wood	Wood	Wood	Wood	Wood	Wood	
Finish of shelves	Tinned	Tinned	Tinned	Tinned	Tinned	Tinned	Tinned	Model H—porcelain; all others—tinned	Model H—porcelain; all others—tinned	Model H—porcelain; all others—tinned	Model H—porcelain; all others—tinned	Model H—porcelain; all others—tinned	Model H—porcelain; all others—tinned	Model H—porcelain; all others—tinned	Tinned	Tinned	Tinned	Tinned	Tinned	Tinned	Tinned	Tinned	Tinned	Tinned	
INSULATION																									
Make of insulation	Balsam Wool	Balsam Wool	Balsam Wool	Balsam Wool	Balsam Wool	Balsam Wool	Balsam Wool	Vegetable	Vegetable	Vegetable	Vegetable	Vegetable	Vegetable	Vegetable	Dry-Zero and Celotex	Dry-Zero and Celotex	Dry-Zero and Celotex	Dry-Zero and Celotex	Dry-Zero and Celotex	Insulite	Insulite	Insulite	Insulite	Insulite	
Nature of insulating material	Formed slabs	Formed slabs	Formed slabs	Formed slabs	Formed slabs	Formed slabs	Formed slabs	Formed slabs	Formed slabs	Formed slabs	Formed slabs	Formed slabs	Formed slabs	Formed slabs	Formed slabs	Formed slabs	Formed slabs	Formed slabs	Formed slabs	Formed slabs	Formed slabs	Formed slabs	Formed slabs	Formed slabs	
Bulk or formed slabs	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
FINISH																									
Cabinet finish (exterior)	LW models—lacquer; PW models—Porcelain	LW models—lacquer; PW models—Porcelain	LW models—lacquer; PW models—Porcelain	LW models—lacquer; PW models—Porcelain	LW models—lacquer; PW models—Porcelain	LW models—lacquer; PW models—Porcelain	LW models—lacquer; PW models—Porcelain	A, B and D models—lacquer; all others—porcelain	A, B and D models—lacquer; all others—porcelain	A, B and D models—lacquer; all others—porcelain	A, B and D models—lacquer; all others—porcelain	A, B and D models—lacquer; all others—porcelain	A, B and D models—lacquer; all others—porcelain	A, B and D models—lacquer; all others—porcelain	Eagle—porcelain; all others—lacquer	Eagle—porcelain; all others—lacquer	Eagle—porcelain; all others—lacquer	Eagle—porcelain; all others—lacquer	Eagle—porcelain; all others—lacquer	Lacquer	Lacquer	Lacquer	Lacquer	Lacquer	
Make of exterior finish	Lacquer—Bradley-Vrooman; Porcelain—Ferro	Lacquer—Bradley-Vrooman; Porcelain—Ferro	Lacquer—Bradley-Vrooman; Porcelain—Ferro	Lacquer—Bradley-Vrooman; Porcelain—Ferro	Lacquer—Bradley-Vrooman; Porcelain—Ferro	Lacquer—Bradley-Vrooman; Porcelain—Ferro	Lacquer—Bradley-Vrooman; Porcelain—Ferro	White	White	White	White	White	White	White	White	White	White	White	White	White	Bradley-Vrooman	Bradley-Vrooman	Bradley-Vrooman	Bradley-Vrooman	Bradley-Vrooman
Colors offered as standard	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White
Colors offered on special order
Cabinet finish (interior)	Porcelain	Porcelain	Porcelain	Porcelain	Porcelain	Porcelain	Porcelain	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White
Make of interior finish	Ferro	Ferro	Ferro	Ferro	Ferro	Ferro	Ferro
HARDWARE																									
Make of hardware	Grand Rapids Brass	Grand Rapids Brass	Grand Rapids Brass	Grand Rapids Brass	Grand Rapids Brass	Grand Rapids Brass	Grand Rapids Brass	Stamped	Stamped	Stamped	Stamped	Stamped	Stamped	Stamped	Stamped	Stamped	Stamped	Stamped	Stamped	Stamped	Winters & Crampton	Winters & Crampton	Winters & Crampton	Winters & Crampton	Winters & Crampton
Process of manufacture	Stamped	Stamped	Stamped	Stamped	Stamped	Stamped	Stamped	Brass	Brass	Brass	Brass	Brass	Brass	Brass	Brass	Brass	Brass	Brass	Brass	Brass	Brass	Brass	Brass	Brass	Brass
Basic metal of hardware	Chromium	Chromium	Chromium	Chromium	Chromium	Chromium	Chromium	Chromium	Chromium	Chromium	Chromium	Chromium	Chromium	Chromium	Chromium	Chromium	Chromium	Chromium	Chromium	Chromium	Chromium	Chromium	Chromium	Chromium	Chromium
Finish of hardware
DOORS																									
Material used for breaker strip	Wood	Wood	Wood	Wood	Wood	Wood	Wood	Wood	Wood	Wood	Wood	Wood	Wood	Wood	Bakelite	Bakelite	Bakelite	Bakelite	Bakelite	Model 405—wood; all others—Formica	Model 405—wood; all others—Formica	Model 405—wood; all others—Formica	Model 405—wood; all others—Formica	Model 405—wood; all others—Formica	
Material used for gasket	Rubberized fabric	Rubberized fabric	Rubberized fabric	Rubberized fabric	Rubberized fabric	Rubberized fabric	Rubberized fabric	Live rubber	Live rubber	Live rubber	Live rubber	Live rubber	Live rubber	Live rubber	Rubber	Rubber	Rubber	Rubber	Rubber	Rubber	Rubber	Rubber	Rubber	Rubber	Rubber
Make or brand of gasket	Backstay Welt	Backstay Welt	Backstay Welt	Backstay Welt	Backstay Welt	Backstay Welt	Backstay Welt	..	..	..	..	..								

CHICAGO UNDERTAKER INSTALLS COMPLETE CONDITIONING SYSTEM

CHICAGO—New York Blower Co. has just made an installation of complete air conditioning equipment in the building of Lain & Son, undertakers, 316 West 63rd St., Chicago.

Mr. Lain first tried an exhaust system of ventilation which proved inefficient. In 1924, when a second floor was added to the building, he installed an air washer, supply fans, and heating coils with hand control. This system was an improvement, but was not valuable for cooling purposes, and being hand-operated the temperature was subject to wide fluctuation.

Expanded, Installed Air Conditioning

During the summer of 1931 he remodelled the entire front of the building and added two new parlors on the second floor. At this time the New York Blower installation was made.

Two complete air conditioning units were installed, one for each floor, since the floors are used independently. The first floor sees service in the daytime, and the second floor is used at night.

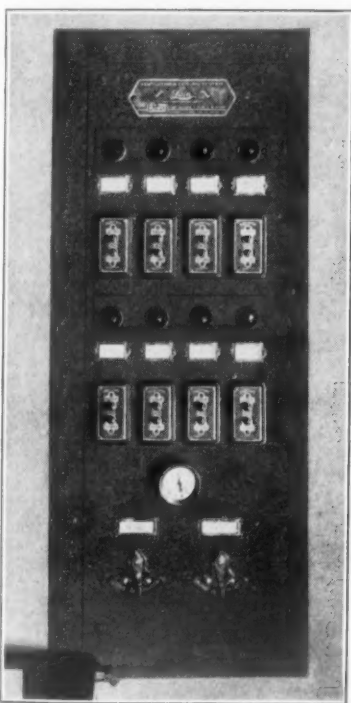
Each unit consists of a tempering coil, double bank dehumidifier and air washer, reheating coil and supply fan connected by V belts to the motor. Air washers have direct connected pumps and motors for circulating the water. Fresh air intakes, extending to the roof, are provided, and return air lines connect into the base of the fresh air ducts, so that all air can be recirculated, or vice versa.

6,000 c.f.m. Capacity in Each Unit

Each unit has a capacity of 6,000 c.f.m., which changes air on each floor eight times per hour. Exhaust fans of the same capacity are furnished and connected to the return air ducts.

All fans, pumps, and compressor

Control Panel

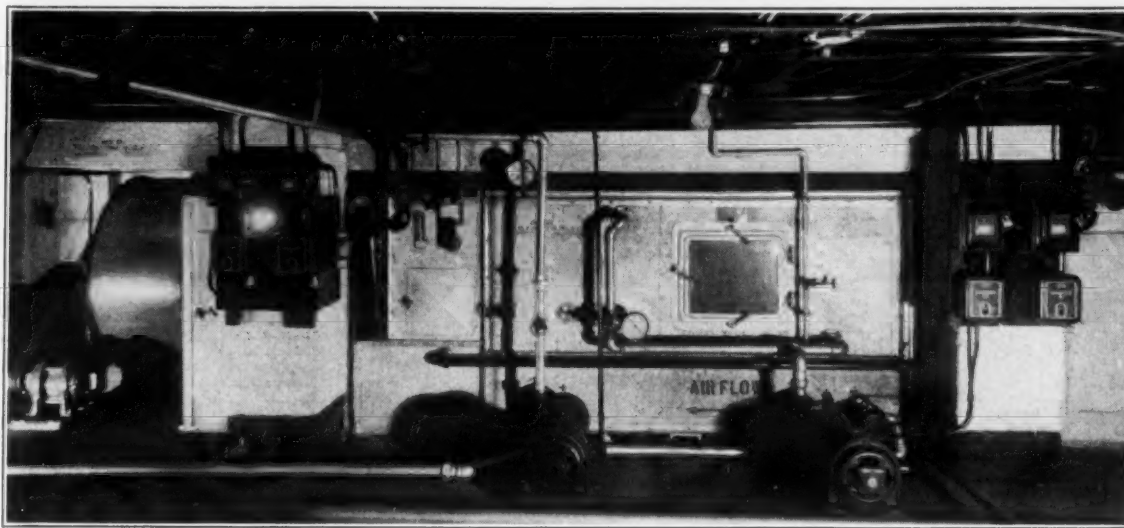


Located in Mr. Lain's private office is the central panel with push buttons for controlling the system.

motors are 3-phase, alternating current, wired for remote control to a central panel in Mr. Lain's private office. This panel has a stop and start push button with a red indicating light for each motor.

Mr. Lain can thereby control the entire system, and note at a glance which equipment is in use. On this panel is an air gauge and air switches for control of the fresh air and recirculating dampers. Air can be taken from the outside or recirculated by simply mov-

On Duty in the Basement



Air conditioning equipment in the basement of Lain & Son, Chicago undertakers, was installed by engineers of the New York Blower Co. and the Midwest Engineering Co., Frick representative in Chicago.

ing the lever. By setting the lever on "auto control," the dampers will work automatically.

A system of refrigeration, providing ice water for use in summer cooling, has been installed. Complete automatic operation was the governing factor in the selection of the refrigerant and equipment used, according to New York Blower engineers.

Estimate of Cooling Load

The following estimates of the cooling load are based on maintaining an inside temperature of 80° F. with 50 per cent relative humidity, outside weather conditions 95° F. dry bulb, and 75° F. wet bulb temperature:

	B.t.u.
Heat losses	
Through walls, floor and ceiling	39,800
Infiltration	23,000
Electric lights and other heat losses	12,200
100 people at 400 B.t.u. each	40,000
Evaporating 100 lbs. water from air	100,000
Total	215,000

This is equivalent to about 18 tons of refrigeration, engineers of the installation firm point out.

Ammonia was chosen as the refrigerant. A double cooling system of ammonia and brine was installed, all cooling being done outside of the air washer unit. Two coolers of the "Z" type are used. In the first, ammonia cools the brine, and in the second the brine cools water which is taken by pumps and delivered to the spray chambers.

Installed 20 to 25 Tons of Refrigeration

The plant installed has a capacity of 20 to 25 tons per 24 hours, and consists of:

A 6-in. x 6-in. twin ammonia compressor connected by V-belts to a 25-hp., 1,200 r.p.m. General Electric motor. The compressor operates at 300 r.p.m., 30 lbs., 16.6° F. at suction, and 185 lbs. gauge discharge pressure.

The compressor will start and stop automatically as required, being controlled by a thermometer in the water cooler. A float switch is installed so that if the warm water which is being pumped from the air washer tanks ceases to flow over the coils, the compressor will automatically stop.

The condenser and receiver are combined, being of the shell and tube type. The shell is 16 in. in diameter, 9 ft. long, containing 41 1.25 in. tubes, arranged for 14 passes. Total tube surface is 124 sq. ft. Cooling water requirements are 30 g.p.m. with 70° F. water.

The "Z" type brine cooler is made up of extra heavy ammonia coils bent "Z" shape and welded into headers. Flooding pans are furnished under the pipes, and the coils are supported from structural stands in the tank.

The tank for brine storage, measuring 12 ft. by 2 ft. by 2 ft., is of 3/16 in. welded steel plate. The brine is maintained at a temperature of 28° to 30° F. The pump which circulates the brine through the water cooler is of the

horizontal double suction type connected direct to the motor.

The water cooler is similar to the brine cooler, and water temperatures are kept between 42° and 46° F. The two air conditioning units circulate 140 g.p.m. Both brine and water coolers are insulated with 2-in. corkboard and 4-in. granulated cork.

The coolers as a whole are enclosed by wood frame work, and access to various parts of it may be made through hinged doors. The cooler tanks are furnished with flanges for pump connections, and overflows and drains to the sewers.

Control of System

A self-contained belt-driven compressor with a storage tank furnishes the air for the regulation system. Diaphragm valves are furnished on the tempering and reheating coils, and a motor controls the fresh air and recirculating dampers.

In winter, dry bulb temperatures are controlled by an insertion thermostat at the leaving end of the air washer, which controls the diaphragm valve on the tempering coil and the dampers.

A thermostat in the fan discharge controls the diaphragm valve on the reheating coil, and a pilotstat in the treated space works in conjunction with the instrument in fan discharge.

In summer, the temperature is controlled by a thermostat in treated space under the same cover as the pilot thermostat, which operates the fresh air and return dampers when the switch is set to "auto control."

Humidity control in summertime is accomplished by an insertion thermostat in the fan discharge which oper-

ates a three-way valve in the suction line of the air washer spray pump. The valve operates so that warm water from the air washer tank or ice water from the cooling tank will be delivered to the sprays as demanded by the thermostat.

The fans in the air conditioning apparatus are single width, single inlet of the M.E. type with forward curved blades for slow, quiet operation, delivering air at a static pressure of 1½ in.

The dehumidifiers have double bank sprays with spray heads of the mist type, the spray heads operating in opposite directions. Each dehumidifier is furnished with 35 spray nozzles, each handling 2 g.p.m. at 25 lbs. of pressure.

Flooding headers and nozzles for eliminator plates are also included. The eliminators are set vertical 1½ in. centers, crimped to change the direction of air six times. Lips are provided to eliminate any free moisture.

A back spray and distributing louvre at the entering end distributes the air

evenly through the spray chamber and eliminates any back spray. Centrifugal pumps directly connected to the motors circulate the spray water and return the warm water to the cooling tank.

All fans and dehumidifiers in the installation are manufactured by the New York Blower Co. The heating coils are the product of the American Radiator Co., and the motors are furnished with Cutler-Hammer 9586 starters and remote control push buttons. The fans are connected to the motors through Allis Chalmers Texrope Drives.

Charles D. Faulkner, architect, Chicago; Johnson Service Co., Chicago; and the Frick Co. and Midwest Engineering Co., refrigeration firms, cooperated in the installation.

The new apparatus was installed in the basement, and difficulty was encountered in the designing of apparatus to suit the low room, the average height being only 6 ft. 4 in.

The establishment includes a modern chapel on the first floor, of Gothic architecture, with walnut paneling which extends to the ceiling. The chapel seats 300 persons.

Air Supplied Through Grilles

Air is supplied through side and rear grilles near the ceiling which are fitted with diffusers to direct air toward the ceiling. Air is exhausted or recirculated through mushrooms under the seats.

The balance of the first floor is divided into private offices, a reception and accounting room, a display room for caskets, vaults, etc. Each room is individually supplied with air through a grille at the ceiling, and is returned at the floor into the corridor through a large grille connecting to a duct leading to the exhaust fan in the basement.

Ducts supplying air to the second floor are above a furred ceiling. A supply grille is located near the ceiling in each room. The lounge is supplied by six grilles, one over each small parlor. As no connecting doors are used, all return air passes into the lounging room and then through a grille back to the air washing unit.

Separate exhaust fans with ducts and grilles remove the air from the smoking room and rest rooms.

The third floor of the building is used entirely for storage purposes.



SHAFT SAVINGS

Add the savings we can affect on your shaft costs to the profit side of your ledger. Complete information mailed executives without obligation.

MODERN MACHINE WORKS, INC.

156-160 Milwaukee St., Dept. D, Milwaukee, Wisconsin

EXTRA DRY ESOTOO

TRADE MARK REG'D U. S. PAT. OFF.

The Purest Liquid Sulphur Dioxide
REFRIGERATION GRADE
GUARANTEED

Super-dried by itself—no other
chemicals used in drying.

Service Men rely on our prompt deliveries from local stocks and our personal service

Prompt shipments from our stocks at West Norfolk, New York, Boston, Atlanta, Jacksonville, Miami, Tampa and Houston, and also with the following agents:

Bartlett Chemicals, Inc., New Orleans, La.	Innis, Speiden & Co., Chicago, Ill.
Chemical Utilities Co., Cincinnati, Ohio	Eaton-Clark Co., Detroit, Mich.
G. S. Robins & Co., St. Louis, Mo.	Rolls Chemical Co., Buffalo, N. Y.
Denver Fire Clay Co., Denver, Colo.	Shanahan Chemicals, Ltd., Vancouver, B. C., Can.
The Braun Corp., Los Angeles, Cal.	Beaver Soap & Chemicals, Ltd., Winnipeg, Man., Canada
Braun, Knacht-Heimann Co., San Francisco, Cal.	Bruce Ross, Ltd., Toronto, Ont., Canada, and Montreal, Que., Canada
Carl F. Miller & Co., Seattle, Wash.	Stein Brothers, Ltd., London, England
Midwest Chemical Co., Inc., St. Paul, Minn.	

Write, wire or cable where we may serve you.
Cable Address, "Eustis Boston".

VIRGINIA SMELTING CO.

WEST NORFOLK, VIRGINIA

F. A. EUSTIS, Secretary

131 State Street, Boston and 75 West Street, New York

ROME CONDENSERS, COILS and FINNED TUBES

Made in various sizes for all Refrigeration duties
Economical, Efficient, Permanent

Full information upon request

Rome-Turney Radiator Co., Rome, N.Y.

Makers of High Grade Products since 1905

NORMAN S. WRIGHT & CO.
41 Spear Street
San Francisco, Calif.
Pacific Coast Distributors

FRETZ BRASS & COPPER CO.
523 Arch Street
Philadelphia, Pennsylvania
Representatives

Apex, Gibson, Starr-Freeze and Napier Specifications

Apex								Gibson					Starr-Freeze							Napier				
APEX ELECTRICAL MFG. CO. 1067 E. 152nd St., Cleveland								GIBSON ELECTRIC REFRIGERATOR CO. Greenville, Mich.					STARR CO. Richmond, Ind.							METAL SAW & MACHINE CO., INC. Springfield, Mass.				
Model or Catalog No.	L-500	L-600	L-800	P-600	P-800	L-410	L-610	SG-35	SG-47	SG-63	SG-82	SG-82S	R	W	M	O	P	F	G	A-4	A-5	A-6	A-8	
CABINET SPECIFICATIONS																								
Overall dimensions, including hardware																								
Height (inches)	49½	51½	57	51½	57	53½	58½	45	49½	52½	54½	54½	55½	55½	57½	57½	64½	60½	67	58	58	60½	60½	
Width (inches)	26½	28½	31½	28½	31½	24½	27½	24½	24½	29½	35½	35½	24½	24½	32½	32½	25	46½	49½	25½	26½	30½	35	
Depth (inches)	24½	26½	26½	26½	26½	23	25	27½	27½	28½	29½	29½	22½	22½	26	26	22½	26	26	22½	22½	22½	25	
Thickness of insulation																								
Top of cabinet (inches)								2	2	2	2	2	3	3	3	3	2½	3½	3½	3	3	3	3	
Sides of cabinet (inches)								3	3	3½	3½	3½	2½	2½	3	3	2½	3½	3½	3	3	3	3	
Bottom of cabinet (inches)								3½	3½	4	4	4	2½	2½	4	4	2½	3½	3½	3	3	3	3	
Inside dimensions of cabinet liner																								
Height (inches)						25½	31	20	25½	27½	29½	29½	27½	27½	29½	29½	36	29½	35	28½	30½	32	32	
Width (inches)						19½	22	17½	18½	22½	27½	27½	19½	19½	25½	25½	20	39½	42½	18½	20½	24	28½	
Depth (inches)						15½	17½	17	17	17	17	17	22½	16½	16½	16½	14½	16½	16½	16	16	16	18	
Thickness of exterior metal (gauge)													6½	6½	6½	6½	7½	12	7½	6	6½	6	6	
Thickness of interior metal (gauge)													5½	5½	5½	5½	5½	6	4½	6	5	5	5	
Number of refrigerator doors	1	1	1	1	1	1	1	1	1	1	2	2	1	1	1	2	1	2	2	1	1	1	2	
STORAGE CAPACITY																								
Gross food storage capacity (cu. ft.)	4.4	5.6	7.8	5.6	7.8	4.6	6.9	3.5	4.7	6.3	8.15	8.15	5.0	5.0	7.0	7.0	6.14	11.0	14.2	5.1	5.9	7.2	9.5	
Net food storage (cu. ft.) (Nema rating)	3.8	4.8	7.0	4.8	7.0	4.0	6.2	3.0	4.09	5.53	7.28	7.28	4	4	4	4	5	5	5	4.2	5.0	6.0	8.0	
Number of shelves						4	5	2	3	4	4	4	4	4	4	4	5	4	5	4	4	5	5	
Total shelf area (sq. ft.) (Nema rating)	7.7	9.1	13.7	9.1	13.7	7.5	12.4	6.3	8.02	11.59	13.4	13.4	9.0	9.0	13.0	13.0	9.8	16.25	20.75	6.5	9.5	11.0	16.5	
Greatest distance between any two shelves													6¼	6¼	6½	6½	7½	12	7½	6	6½	6	6	
Shortest distance between any two shelves													5½	5½	5½	5½	5½	6	4½	6	5	5	5	
ICE CUBE TRAYS																								
Number of ice cube trays	2	3	3		3	2	3	2	3	4	5	5	2	3	4	4	6	8		2	3	3	4	
Inside dimensions of trays (inches)																								
Length (at top of tray)													11	11	11	11	11	11		9½	9½	9½	9½	
Width (at top of tray)													5½	5½	5½	5½	5½	5½		5	5	5	5	
Depth													1½	1½	1½	1½	1½	1½		1½	1½	1½	1½	
Number of cubes produced at one freezing	56	84	112	84	112	56	84	42	63	105	126	126	56	84	112	112	112	168	224	56	84	84	112	
Weight of ice cubes produced (lbs.)	3½	5¼	7¼	5¼	7¼	3½	5¼	2½	3¾	6¼	7¾	7¾	2½	3¾	10	10	10	15	20	3½	5¼	5¼	7	
COMPRESSOR SPECIFICATIONS																								
Compressor capacity (lbs.) (ASRE rating)	80	95	110	95	110			65	65	75			95	130	130	130	130	253	253	95	95	95	95	
Motor size (hp.)						1-6	1-6	1-5	1-5	1-5			1-8	1-6	1-6	1-6	1-6	1-4	1-4	1-6	1-6	1-6	1-6	
Quantity of refrigerant in system (lbs.)	4	4½	5	4½	5			25 oz.	25 oz.	25 oz.	25 oz.	25 oz.	29 oz.	30 oz.	30 oz.	30 oz.	30 oz.	30 oz.	38 oz.	2	2	2	2	
Quantity of lubricant in system	14 oz.	14 oz.	14 oz.	14 oz.	14 oz.			14 oz.	14 oz.	14 oz.	14 oz.	14 oz.	29 oz.	30 oz.	30 oz.	30 oz.	30 oz.	38 oz.	38 oz.	1 qt.	1 qt.	1 qt.	1 qt.	
WEIGHT																								
Net weight of complete refrigerator (lbs.)	290	309	387	334	414			330	382	420	510	510	265	268	359	368	329	526	608	280	310	330	410	
Total shipping weight (lbs.)	367	423	473	448	500								368	368	464	474	405	665	760	320	350	370	450	
PRICE																								
F. o. b. factory price																								
Retail price, without installation																								
Installed price (zone B from Cleveland)	\$169.50	197.50	249.50	244.50	299.50	119.50	149.50						\$149.50	195.00	225.00	235.00	215.00	335.00	395.00	\$175	200	240	280	
CABINET MATERIALS																								
Make of cabinet	L-410 and L-610—Rex; all others—Leonard							Gibson						Starr-Freeze							Model A-4—Illinois Refrigerator Co.; others—Seeger			
Material used for exterior	Metal							Metal						Metal							Metal			
Make of exterior metal								Armco						Armco							Armco			
Material used for frame	Wood							Steel						Wood							Model A-4 — steel; all others—wood			
Make of interior metal								Armco						Armco							Armco			
Finish of shelves	Tinned							Tinned						Tinned							Tinned			
INSULATION																								
Make of insulation	Leonard—Celotex and Balsam Wool; Rex—Balsam Wool							Balsam Wool						Zilem							Dry-Zero			
Nature of insulating material	Vegetable							Vegetable						Vegetable							Vegetable			
Bulk or formed slabs	Formed slabs							Formed slabs						Formed slabs							Formed slabs			
FINISH																								
Cabinet finish (exterior)	Leonard L Models—lacquer; Leonard P Models—Porcelain; Rex—enamel							Lacquer or porcelain						Model R—lacquer; others—lacquer or porcelain							Lacquer			
Make of exterior finish								Lacquer—Bradley-Vrooman; porcelain—Ferro						White							White			
Colors offered as standard	White							SG-82B—black; others—white						Porcelain							Porcelain			
Colors offered on special order	Porcelain							Porcelain						Porcelain							Model A-4—Illinois Refrigerator Co.; others—Seeger			
Cabinet finish (interior)								Ferro																
Make of interior finish																								
HARDWARE																								
Make of hardware								Grand Rapids Brass													Model A-4—Grand Rapids Brass; all others—Seeger			
Process of manufacture								Stamped													Grand Rapids Brass—stamped; Seeger—cast			
Basic metal of hardware	Chromium							Brass						Brass							Brass			
Finish of hardware								Chromium						Chromium							Chromium			
DOORS																								
Material used for breaker strip	Panelyte							Wood													Model A-4 — wood; all others—Panelyte			
Material used for gasket	Rubber							Rubberized fabric						Rubberized fabric							Model A-4—Rubberized cloth; all others—rubber			
Make or brand of gasket								Backstay Welt													Model A-4 — Wirf; all others—Jarow			
EVAPORATOR																								
Make of evaporator								Gibson						Starr-Freeze							Mullins			
Evaporator construction	Tubular							Tubular						Shell							Shell			
Material used for evaporator	Leonard—porcelain on steel							Brass and copper						Brass and copper							Porcelain on steel			
Type of refrigerant control	Leonard—low side float; Rex—expansion valve							Expansion valve						High side float							Low side float			
Make of expansion valve								American Radiator						None							None			
Make of brine tank								None						None							None			
Solution used for brine	Rex—Alcohol and water							Aluminum						Aluminum							Mullins aluminum			
Type and make of trays	Leonard—rubber grid							1-3/16x1¼x1-7/16						1¼							1¼x1¼x1½			
Dimensions of ice cube (inches)																								
SPECIAL FEATURES																								
	Leonard—interior light													Interior light in DeLuxe models										
														Vegetable tray in DeLuxe models										
COMPRESSOR																								
Make of compressor	Apex							Gibson						Starr-Freeze							Metal Saw & Machine Co.			
Type of system	Conventional							Conventional						Conventional							Conventional			
Type of compressor	Reciprocating							Reciprocating						Reciprocating							Rotary			
Compressor drive	Belt							Direct						Belt							Direct			
Type and make of shaft seal	Bellows							Bellows						Bellows							Bellows			
Location of compressor	Below							Above						Below							Below			
CONDENSER																								
Make of condenser								Bush or McCord						Fan							Bush			
Fan or natural draft cooling	Fan							Fan						Finned tube							Fan			
Type of condenser	Finned tube							Finned tube													Finned tube			
REFRIGERANT																								
Refrigerant used	Sulphur Dioxide							Sulphur Dioxide						Sulphur Dioxide							Methyl Chloride			
Trade name	SO ₂							SO ₂						SO ₂							CH ₂ Cl			
Chemical formula																								
LUBRICATION																								
Make of compressor lubricant								Sunisco						Refrigeration oil							Texaco			
How often should motor be oiled	Semi-annually							Semi-annually						Every 4 or 5 months							Every 2 or 3 months			
MOTOR																								
Make of motor	Leonard—Century, General Electric or Wagner; Rex—General Electric or Apex							Delco						Repulsion-Induction							General Electric			
Type of motor	Leonard—Capacitor							Repulsion-Induction						Direct							Capacitor			
Method of starting	Direct							Direct						Change motor							Direct			
How adapted to odd frequency	Change motor							Change motor						Regular							Change motor			
What additional cost is entailed														Change motor							None			
How adapted to direct current																					Change motor			
What additional cost is entailed																					None			
CONTROL																								
Make of control	Leonard—Penn; Rex—General Electric							Ranco						Temperature							Ranco or General Electric			
Type of control	Manual regulator							Temperature						Manual regulator							Temperature			
Temperature regulation method	Leonard—Penn; Rex—General Electric							Manual regulator						Shut down unit							Manual regulator			
Make of overload cut-out	Shut down unit																							
How is defrosting accomplished																								
POLICY																								
Who determines retail price	Leonard—three years; Rex—one year							Three years						Model R—one year; all others—three and one-half years (material and workmanship)							Retailer			
Guarantee period on cabinet								Dealers						Model R—one year; all others—three and one-half years (material and workmanship)							Three years			
Guarantee period on system	L-410 & L-610—three years; others— one year													Dealer and distributor							Dealer			
By whom serviced														Yes							Yes			
Are replacement parts sold to independent service companies																								

Expansion Valves, Controls Can Be Set With Dial Type Thermometer

By Elmer Born, Service Manager, Gibson Electric Refrigerator Corp.

LOW cost, simplicity, and foolproofness are the chief features of a service instrument being introduced to Gibson distributors and dealers. For a dealer this single instrument takes care of practically all Gibson service problems. It enables him to set with considerable accuracy, the expansion valve and the thermostat—the only two adjustments that are made in the field.

It eliminates guesswork without resorting to complicated and delicate laboratory methods. Yet it is accurate, holds its calibration surprisingly well, and is easily recalibrated by any service man. It is rugged enough to withstand any usual shocks. Its use even by an inexperienced man can in no way harm the unit. And its appearance is sufficiently scientific to secure a desirable psychological effect on that class of consumers who imagine troubles where none exist.

The instrument itself is a highly sensitive dial-indicating thermometer working on the temperature-pressure principle. When being used, the thermometer bulb is clamped to the evaporator and the dial-indicator properly connected to the bulb by capillary tubing—is brought outside the cabinet door, which may be closed over the capillary tubing. Using a screw driver, both expansion valve and thermostat may then be set from readings of this one instrument.

This use of a thermometer for setting expansion valves is a step forward in service procedures. It is the result of considerable research. Wishing more than six months ago to eliminate the field use of gauges, the necessity of purging SO₂ lines in a customer's home, and the possibility of getting air and moisture into a unit, tests on the "temperature" method were started, using ordinary mercury thermometers, potentiometers, recording and indicating pressure thermometers, and other special laboratory-made contrivances. The method worked. Results were remarkably accurate. The original theory was right.

Why, after all, should an expansion valve be set to some definite pressure or vacuum? Merely because it is known that some definite pressure corresponds to some definite desired temperature. Why not, then, set the expansion valve directly to that definite temperature? That briefly is the logic which produced the "temperature" method.

To set the thermostat by the same

single instrument, it remained only to design some thermometer quick enough in action to catch rather rapid changes in temperature.

The instrument used by the Gibson field organization is the Tag Indicating Dial thermometer.

Calibration

At frequent intervals the thermometer ought to be checked, and, if necessary, readjusted. This is accomplished by subjecting the thermometer bulb to a known temperature; then setting the pointer to indicate this temperature.

Immerse the bulb in finely cracked, melting ice made from pure water. Do not use ice cubes; the ice into which the bulb is placed should be almost "pulverized." Use plenty of ice, be sure that it is melting and that the bulb is well covered.

Only by following the above precautions can correct results be obtained.

Allow the pointer to reach its lowest setting. Then adjust the pointer to indicate 32°, the melting point of pure ice. The adjusting screw is reached by removing the flister-head screw in the top, left-hand edge of the thermometer box.

Do not hurry the calibrating process. Allow the pointer to reach its lowest setting.

Before checking and setting the expansion valve or the thermostatic control, the following preliminary steps should be made:

1. Remove ice trays. This speeds up the checking.
2. Defrost the evaporator if the frost coating is more than 1/16 in. thick; otherwise the results may not be reliable.
3. Using the special clamp, bind the thermometer bulb to the temperature control clip (located at the bottom of the evaporator on the third coil from the rear).

a. Place the thermometer bulb in the front of the control bulb clip rather than at the rear.

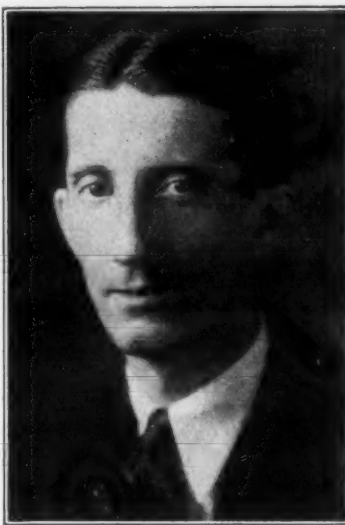
b. Be sure to secure a good metal-to-metal contact.

4. Bring the thermometer box outside of the cabinet and close the cabinet door.

Checking Expansion Valve Setting

1. Apply the preliminary steps.
2. Then turn temperature control knob to the right, or clockwise, until the unit

Service Director



ELMER F. BORN
Gibson service manager writes on simplified adjustment methods.

will run continuously.

a. If, with the control in the No. 8 position, the unit should not run continuously, remove the control knob, replace it to the No. 1 position and again turn it to the No. 8 position. Repeat, if necessary.

3. The thermometer pointer will soon stop moving; i. e., it will indicate a constant or steady lowest temperature.

a. When the expansion valve is correctly set, the thermometer reading will be between 11 and 12°.

b. Allow ample time for the thermometer to reach its lowest, constant reading before attempting to make any adjustments, at least 15 minutes if cabinet is already cold or 15 minutes after cabinet is below 50° F.

4. Unless expansion valve is to be adjusted, return control knob to its original setting.

Adjusting the Expansion Valve

1. Follow the procedure for checking "Expansion Valve Setting."

2. Remove the rubber cap on the style equipped with caps, loosen the packing nut on the other style.

a. The expansion valve will be found at the rear of the evaporator, upper right-hand corner.

3. Using a screw driver, turn the adjusting screw in to raise the temperature; out to lower the temperature.

a. Keep the cabinet door closed except when actually making an adjustment.

b. Do not turn the adjusting screw out too far when wishing to lower the temperature, as this will cause the temperature to rise. To safeguard against this possibility, an inexperienced man should turn the adjusting screw but very little at a time.

4. After making an adjustment, allow at least five minutes for the unit to stabilize itself at the new setting before attempting another adjustment.

5. Secure the correct thermometer reading given in Step 3 under "Checking Expansion Valve Setting."

a. Be sure that thermometer is holding constantly at the correct temperature.

6. Replace the rubber cap or tighten the packing nut. Return control to its original setting.

a. When tightening the packing nut, it is advisable to hold the adjusting screw stationary with a screw driver.

Checking Control Setting

1. Apply the preliminary steps.

2. With the control knob in the No. 1 position, note the thermometer readings at the moment the unit stops (cut-off) and at the moment it starts (cut-on).

3. When set correctly, the control will cut off between 17 and 18° F., and cut on between 29 and 30° F.

Setting Control

1. Follow the procedure to "Checking Control Setting."

2. Make the control cut off when the thermometer reads between 17 and 18° F.

a. If control is cutting off at too warm a temperature, turn the control knob clockwise approximately one number for each degree too warm, remove the knob and replace it to the No. 1 position.

b. If control is cutting off at too cold a temperature, remove the knob, replace it to a higher numbered position (approximately one number for each degree too cold) and turn it back to the No. 1 position.

c. With the Ranco type control, the cut-off point must be set before attempting to set the cut-on point.

3. Make the control cut on when the thermometer reads between 29 and 30° F. by turning the differential adjusting screw, located under the control knob retaining screw.

a. Screw in to raise the cut-on temperature; screw out to lower the temperature.

b. One-half turn of the differential screw will change the temperature approximately one degree.

4. Check both cut-off and cut-on temperatures through two complete cycles, making any final adjustments.

Carrier Designs Pre-Cooler Using Ice For Conditioning Pullman Cars

NEWARK—Melting ice is the cooling medium in a new type of railroad car pre-cooler, several units of which are being tried out by a large railroad for cooling sleeping cars in its terminal. These units were made by the Carrier Engineering Corp.

The cooling units are portable, mounted on trucks which can be wheeled on the platform to the car to be cooled or, if more convenient, can be kept at a fixed point and the cars brought to it.

Ice was selected because of its ready portability, and because Carrier engineers find it economical in the original cost of apparatus.

The Carrier railroad car pre-cooler consists of an ice-melting tank, an Aero-fin cooling coil, offering large cooling surface, and pump and fans all mounted in a water-proof, cork-insulated steel casing.

Rapid melting to provide quick cooling is obtained by spraying water on the ice, Carrier engineers claim. The melter ice water is drawn from the tank, passes through the cooling coil, and is sprayed back over the ice.

Air is withdrawn from the car through a flexible canvas duct placed in a window-opening. It passes through the spray, being cleansed in the process, and then passes over the cooling coil and is driven back into the car through a second canvas duct equipped with a distributing nozzle to increase circulation in the car.

Quick cooling is essential in this work because the length of time a cooling unit may operate is limited to the time between "spotting" the car in the yard and opening it to passengers, it is explained. This time varies in different terminals, ranging from half an hour to an hour and a half. The speed of cooling also varies somewhat with the

type of car—standard sleeper, compartment car, coach, etc.

Operating tests have shown that an hour and a half is enough time for a very satisfactory job of pre-cooling; even half an hour permits a "skim" cooling which drops the temperature several degrees and makes the air in a car much more grateful to incoming passengers. The manufacturers claim a considerably higher rate of cooling for this apparatus than is possible with other types.

The casing of the unit is 6 ft. 3 3/4 in. long, 3 ft. 5 1/2 in. wide, and 6 ft. 3 3/4 in. high and weighs 2,000 lbs. unloaded. The pump handles 30 g.p.m. and is driven by a 1/2-hp. motor. The fans handle approximately 1,600 c.f.m. and are driven by a 3/4-hp. motor. Motors are furnished in 110/220 v., a.c. or d.c. as required. The ice tank has a capacity of 1,000 lbs. of ice.

FRIGIDAIRE TO CONDITION 12-ROOM HOUSE

FRESNO, Calif.—Sale of Frigidaire air conditioning equipment for the cooling of an entire 12-room house was made last week by Jack Drew, of Devlin-Drew, Frigidaire dealer for the Fresno district.

The installation will be the first in Fresno to be ordered by a home-owner, Mr. Drew says. The buyer is a prominent Fresno business man, who wants to relieve his wife of the discomforts of extreme summer heat, and attacks of hayfever.

The installation is being rushed, according to Mr. Drew, because extreme temperatures will prevail within a few weeks.



Type RZHR capacitor motor—quiet and vibrationless—drip-proof—rubber-cushioned—wool-yarn lubricated—unbreakable steel frame and base. Conduit box is integral part of condenser box, accessible from the front.

Capacitor Motors

Wagner builds both types—capacitor and repulsion-start-induction. Also split-phase, squirrel-cage and direct-current.

Wagner's line of motors is complete. Whatever your need, there's a Wagner motor built to meet it.

Wagner Electric Corporation
6400 Plymouth Ave., St. Louis, Mo.

Repulsion-Induction Motors

Type KAR repulsion-start-induction motor—quiet and vibrationless—rubber-cushioned—wool-yarn lubricated—unbreakable steel frame and base—can be had with open, drip-proof or totally-enclosed end-plates.



5532-3

WOLVERINE SEAMLESS REFRIGERATION TUBING



Dehydrated and
Solder Sealed

Plain or Tin Plated

Guaranteed Free From
Dirt and Moisture

EVERLASTING Wolverine seamless copper tubing—dehydrated and solder sealed—is the perfect answer to refrigeration work—quick, thrifty, permanent. In the factories and the field—in all climates and all applications—hundreds of thousands of installations prove it. Take no chances—specify Wolverine.

A.S.T.M. SPECIFICATION B68-30T
Immediate Shipment from Mill or
Warehouses

WOLVERINE TUBE CO.

SEAMLESS COPPER BRASS & ALUMINUM

1491 Central Ave.

Detroit, Mich.

Phone Vinewood 1-5000

Export Department—H. M. ROBERTS COMPANY, 120 Madison Ave., Detroit, U. S. A.

Cable Address: ROBNS, Detroit

Sales Offices in 26 cities. Stock available at Los Angeles, 1015 E. 16th St.

Write or wire for name of nearest representative

Tricold, Gilson, Niagara, and M&E Specifications

Tricold & Chillard TRICOLD REFRIGERATOR CORP. Buffalo

Model or Catalog No.	TP-122	TP-199	CL-88	CL-112	CL-134	CL-141
CABINET SPECIFICATIONS						
Overall dimensions, including hardware						
Height (inches)	64	69½	55	58½	61½	63½
Width (inches)	29½	35½	26½	28½	32	36½
Depth (inches)	28½	28½	24½	24½	27½	26½
Thickness of insulation	3	3	3	3	3½	3½
Top of cabinet (inches)	U. C.	L. C.	U. C.	L. C.*	3	3
Sides of cabinet (inches)	3	4	3	4	3	3
Bottom of cabinet (inches)	2	5	2	5	3	3
Inside dimensions of cabinet liner	U. C.	L. C.	U. C.	L. C.*	27½	28
Height (inches)	20	26½	20	21½	24	29½
Width (inches)	22	28	19½	21½	24	29½
Depth (inches)	19½	17½	19½	17½	16	17
Thickness of exterior metal (gauge)	18	18	18	18	18	18
Thickness of interior metal (gauge)	18	18	18	18	18	18
Number of refrigerator doors	2	2	1	1	1	2

STORAGE CAPACITY						
Gross food storage capacity (cu. ft.)	7.41	12.21	4.94	5.97	7.66	10.10
Net food storage (cu. ft.) (Nema rating)	5.85	10.18	4.05	4.87	6.17	7.9
Number of shelves	4	4	4	4	4	5
Total shelf area (sq. ft.) (Nema rating)	12.21	19.91	8.81	11.22	13.43	14.11
Greatest distance between any two shelves	12½	10½	12½	11½	12	12
Shortest distance between any two shelves	4½	4	5½	4	5½	6

ICE CUBE TRAYS						
Number of ice cube trays	3	3	2	3	4	5
Inside dimensions of trays (inches)						
Length (at top of tray)	9¼	9¼	9¼	9¼	9¼	9¼
Width (at top of tray)	5¼	5¼	5¼	5¼	5¼	5¼
Depth	1½	1½	1½	1½	1½	1½
Number of cubes produced at one freezing	84	84	56	84	84	140
Weight of ice cubes produced (lbs.)	6	6	4	6	8	10

COMPRESSOR SPECIFICATIONS						
Compressor capacity (lbs.) (ASRE rating)	120	166	120	120	120	120
Motor size (hp.)	1-6	1-4	1-6	1-6	1-6	1-6
Quantity of refrigerant in system (lbs.)	1	1½	1	1	1	1
Quantity of lubricant in system	¼ pt.	¼ pt.	¼ pt.	¼ pt.	¼ pt.	¼ pt.

WEIGHT						
Net weight of complete refrigerator (lbs.)	575	675	375	405	470	540
Total shipping weight (lbs.)	575	675	375	405	470	540

PRICE						
F. o. b. factory price	\$360					
Retail price, without installation	470		179	198	248	300
Installed price						

CABINET MATERIALS						
Make of cabinet	Rex					
Material used for exterior	Metal					
Make of exterior metal	Armco					
Material used for frame	Wood					
Make of interior metal	Armco					
Finish of shelves	Tinned					

INSULATION						
Make of insulation	Balsam Wool					
Nature of insulating material	Vegetable					
Bulk or formed slabs	Formed slabs					

FINISH						
Cabinet finish (exterior)	TP models—porcelain; CL models—lacquer					
Make of exterior finish	White					
Colors offered as standard	None					
Colors offered on special order	Porcelain					
Cabinet finish (interior)	Porcelain					
Make of interior finish						

HARDWARE						
Make of hardware	Grand Rapids Brass					
Process of manufacture	Cast					
Basic metal of hardware	Brass					
Finish of hardware	Chromium					

DOORS						
Material used for breaker strip	Bakelite					
Material used for gasket	Rubber					
Make or brand of gasket	Johns-Manville					

EVAPORATOR						
Make of evaporator	American Radiator					
Evaporator construction	Cast-in Coil					
Metal used for evaporator	Aluminum					
Type of refrigerant control	Expansion valve					

Make of expansion valve	American Radiator					
Make of brine tank						
Solution used for brine	Aluminum					
Type and make of trays						

Dimensions of ice cube (inches)	1¼ x 1 3/16 x 1½					
---------------------------------	------------------	--	--	--	--	--

SPECIAL FEATURES						
TP models—interior light						
CL models—Vegetable tray						
TP models—low-temperature compartment						

COMPRESSOR						
Make of compressor	Universal Cooler					
Type of system	Conventional					
Type of compressor	Reciprocating					
Compressor drive	Belt					
Type and make of shaft seal	Metal seal					
Location of compressor	Below					

CONDENSER						
Make of condenser	Bush					
Fan or natural draft cooling	Fan					
Type of condenser	Finned tube					

REFRIGERANT						
Refrigerant used	Methyl Chloride					
Trade name	Artic					
Chemical formula	CH ₂ Cl					

LUBRICATION						
Make of compressor lubricant	Argon					
How often should motor be oiled	Quarterly					

MOTOR						
Make of motor	Wagner					
Type of motor	Repulsion-Induction					
Method of starting	Direct					
How adapted to odd frequency	Change motor					
What additional cost is entailed	None					
How adapted to direct current	Change motor					
What additional cost is entailed	None					

CONTROL						
Make of control	TP models—Penn; CL models—Ranco					
Type of control	Temperature					
Temperature regulation method	TP models—not variable; CL models—manual regulator					
Make of overload cut-out	TP models—Penn; CL models—Ranco					
How is defrosting accomplished	Not required on TP; shut down CL units					

POLICY						
Who determines retail price	Manufacturer					
Guarantee period on cabinet	One year					
Guarantee period on system	Three years					
By whom serviced	Distributor					
Are replacement parts sold to independent service companies	Yes					

*L. C.—lower compartment; U. C. upper compartment.

Snow Bird GILSON MFG. CO., LTD. Guelph, Ont., Can.

5S	5	7	9	10	23	30
57¼	57¼	59¼	65¼	61¼	92¼	85
24¼	24¼	29	29½	38½	48½	63½
20	20	20¼	20¼	23½	28¼	30½
3	3	3	3	3	2	2
2½	2½	2½	2½	2½	2	2
3	3	3	3	3	2	2
28½	28½	30¼	36¼	33		
19	19	23½	24½	33		
16¼	16¼	16¼	16¼	16		
22	22	22	22	22		
22	22	22	22	22	22	22
1	1	1	1	2	3	6

5.0	5.0	7.0	8.6	10.0	23.0	30.0
4.2	4.2	6.1	7.2	8.8		
3	3	3	4	5		
8.57	8.57	10.57	13.8	20.7	24.0	29.0

2	2	2	2	3	0	0
9%	9%	9%	9%	9%	0	0
5½	5½	5½	5½	5½	0	0
1½	1½	1½	1½	1½	0	0
56	56	56	56	84	0	0
2	2	2	2	3	0	0

160	160	160	190	190	230	230
1-6	1-6	1-6	1-6	1-4	1-4	1-4
4¼	4¼	4¼	5	5	6	6
18 oz.	18 oz.	18 oz.	18 oz.	22 oz.	12 oz.	12 oz.

360	370	411	480	575	1160	1450
-----	-----	-----	-----	-----	------	------

\$215	248	290	385	490	575
\$215	248	290	385	490	575
\$215	248	290	385	490	575

Models 23 and 30—Eureka; others—Renfrew
Eureka—wood; Renfrew—metal

Wood
Armco
Tinned

Eureka—cork; Renfrew—fibre board

Vegetable
Formed slabs

Lacquer

White
Eureka—natural wood; Renfrew—none
Models 5-S, 23 and 30—enamel; all others—porcelain

Grand Rapids Brass
Stamped
Brass
Chromium

Wood
Rubber

Gilson
Shell
Brass and copper

1¼ x 1 3/16

Gilson
Conventional
Reciprocating
Belt

Bishop & Babcock—bellows
Below

Court
Fan
Finned tube

Sulphur Dioxide
SO₂

Suniso
Semi-annually

Leland
Repulsion-Induction
Direct
Change motor

Change motor

Bishop & Babcock
Temperature

Manual regulator
Bishop & Babcock
Shut down unit

Model 5-S—dealer; all others—manufacturer
One year
One year
Dealer

Yes

Niagara HEINZ & MUNSCHAUER CO. Buffalo

2N4	2N5	2N6	3N6	3N8	6310WP
53	58	58	58	58	58
23½	25½	28	28	32	33
20½	22½	24	24	26	22
2	2	2	2	2	2
2	2	2	2	2	2
2	2	2	2	2	2
26	29	29	29	29	30
18½	18½	21¼	21¼	25¼	25¼
15½	16½	17½	17½	18½	17
20	20	20	20	20	20
20	20	20	20	20	20
1	1	1	1	1	2

4.4	5.3	6.4	6.4	8.0	7.45
4.0	5.0	6.0	6.0	7.6	7.05
3	4	4	4	4	4
6.5	9.0	11.7	11.7	13.6	11.71
6½	7	7	7	6½	12
6½	5	5	5	5½	6½

2	2	2	3	3	3
10¼	10¼	10¼	10¼	10¼	10¼
5½	5½	5½	5½	5½	5½
1½	1½	1½	1½	1½	1½
56	56	56	84	84	84
5	5	5	7½	7½	7½

1-6	1-6	1-6	1-6	1-6	1-6
3½	3½	3½	5½	5½	5½
1 pt.	1 pt.	1 pt.	1 pt.	1 pt.	1 pt.

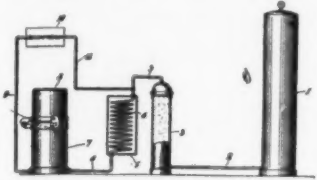
268	327	341	346	373	387
-----	-----	-----	-----	-----	-----

\$215	248	290	38
-------	-----	-----	----

Latest Patents in Electric Refrigeration

ISSUED APRIL 26, 1932

1,855,313. METHOD OF HANDLING PHASE-CHANGEABLE MATERIAL. Harry B. Rudd, Douglaston, N. Y., assignor to Rudd Patents Corp., a Corporation of Delaware. Filed Feb. 21, 1929. Serial No. 341,712. 4 Claims. (Cl. 62-121.)



1,855,313

1. The method of handling refrigerating material, which comprises sealing solid carbon dioxide in a plurality of containers at different times whereupon change in phase of said solid carbon dioxide occurs at different times, withdrawing the material as changed in phase only from the first sealed container, and thereafter withdrawing material as changed in phase from the second sealed container.

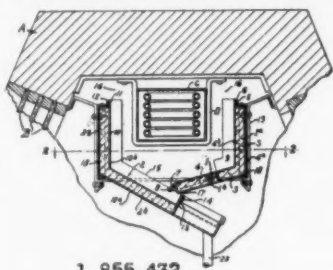
1,855,333. GOVERNOR FOR VARIABLE SPEED GENERATORS. Joseph Borovec, Berwyn, and Renfrew H. Kuehmsted, Highland Park, Ill., assignors to Thompson & Jameson Corp., Chicago, Ill., a Corporation of Illinois. Filed Sept. 28, 1927. Serial No. 222,430. 2 Claims. (Cl. 171-229.)

1. The combination with a variable speed generator, including a generator shaft, of a resistance cooperating with the field thereof to determine the voltage from the generator, an arm for regulating said resistance, a friction plate carried by said shaft for contact with the arm aforesaid to control its position, a centrifugal governor operated by said shaft to control the position of said plate on said shaft and through it the position of the arm aforesaid a housing for said generator, said shaft being journaled at its ends in said housing, said resistance being mounted within said housing to provide a unitary enclosure for said elements.

1,855,432. BAFFLE AND DRIP PAN FOR REFRIGERATORS. Jacob Wesley Vance, Ligonier, Ind., assignor to Hussman-Ligonier Co., St. Louis, Mo., a Corporation of Delaware. Filed Aug. 3, 1931. Serial No. 551,621. 15 Claims. (Cl. 62-103.)

1. A drip pan for a refrigerator, comprising a wall adapted for disposition in a downwardly inclined position beneath the refrigerating unit of the refrigerator, said wall being provided with an edge at its lower portion which is inclined with respect

to the longitudinal axis of said wall, and an upwardly extended lip at said inclined



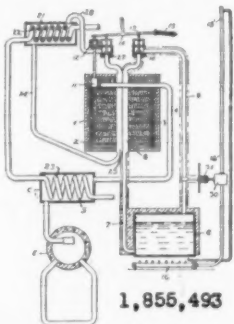
1,855,432

edge for directing water toward an end of said wall.

1,855,467. APPARATUS FOR FREEZING FOODSTUFFS. James J. Barry, Dartmouth, Nova Scotia, Can., assignor to Maritime Fish Corp., Ltd., Montreal, Que., Can. Filed May 23, 1928. Serial No. 280,022. 1 Claim. (Cl. 62-121.)

Apparatus for freezing foodstuffs comprising upper and lower expansion chambers adapted to receive the foodstuff therebetween, a compressor, a condenser having its inlet connected to the discharge side of the compressor and having its outlet connected to said chambers, a precooling chamber surrounding a portion of the last mentioned connection, said chamber having an inlet connected to the expansion chambers and an outlet connected to the suction side of the compressor and means for moving the upper chambers relative to the lower chambers.

1,855,493. REFRIGERATING APPARATUS. Harry F. Smith, Dayton, Ohio, assignor to Frigidaire Corp., Dayton, Ohio, a Corporation of Delaware. Filed Jan. 31, 1930. Serial No. 425,007. 6 Claims. (Cl. 62-118.)



1,855,493

1. In refrigerating apparatus of the intermittent absorption type, a generator-absorber, means for heating and cooling said

generator-absorber including a closed circuit for a heating fluid and a closed circuit for a cooling fluid and means automatically operated upon the initiation of circulation within one of said circuits for preventing the circulation within the other of said circuits.

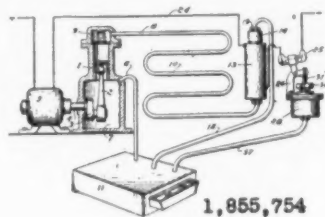
1,855,659. REFRIGERANT. Leonard Kay Wright, Jackson Heights, N. Y. Filed Oct. 4, 1927. Serial No. 224,029. 11 Claims. (Cl. 62-178.)

2. A process of refrigeration comprising liquefying and evaporating a cycloparaffin.

1,855,730. REFRIGERATING APPARATUS. Albert C. Schickler, Cleveland, Ohio, assignor to Edmund E. Allyne, Cleveland, Ohio. Filed June 30, 1927. Serial No. 202,726. 1 Claim. (Cl. 62-118.)

Refrigerating apparatus, comprising a boiler-absorber provided with a return loop through which boiler liquor may be circulated into heat transfer relation with a cooling agent, said loop having two legs, one only of which is cooled, a rectifier communicating with the space in the boiler, a liquid trap communicating with the rectifier beyond the same and having return connection to the cooled leg of said return loop, and an evaporator and a condenser beyond said trap.

1,855,754. REFRIGERATING SYSTEM. John Dubrovic, Logansport, Ind. Filed Feb. 23, 1928. Serial No. 256,303. 12 Claims. (Cl. 62-115.)



1,855,754

1. A refrigerating system including a compressor, condenser and evaporator successively and continuously connected in series with each other, means for driving the compressor; and automatic control means for throttling the connection between the condenser and the evaporator when the compressor is in operation, and for widely opening the said connection when the compressor is halted.

1,855,770. FREEZING APPARATUS. Leroy S. Pfouts, deceased, Canton, Ohio, by Joan S. Pfouts, administratrix, Canton, Ohio, assignor to The H. H. Miller Industries Co., Canton, Ohio, a Corporation of Ohio. Original application filed Jan. 21, 1928. Serial No. 248,543. Divided and this application filed Aug. 10, 1928. Serial No. 298,821. 3 Claims. (Cl. 62-114.)

1. In apparatus of the class described, the combination of a support, a freezing member mounted thereon and comprising a cylinder disposed vertically and having heads for closing its upper and lower ends, said lower head being formed with an opening having a straight edged wall and a horizontal slidable valve element for controlling the rate of falling discharge of material through said opening, said element being formed with a cut away arranged when said element is moved to a predetermined position to cooperate with the said wall of said opening to form a discharge port of relatively small capacity.

1,855,774. HUMIDITY MEASURING. Elmer Schneider, Philadelphia, Pa., assignor to The Brown Instrument Co., a Corporation of Pennsylvania. Filed March 4, 1924. Serial No. 696,912. 7 Claims. (Cl. 73-24.)

1. The method of determining the humidity of an atmosphere which consists in comparing the thermal conductivity of that atmosphere with the thermal conductivity of an atmosphere of determined humidity.

1,855,953. REFRIGERATOR DOOR. George E. Friedrich, San Antonio, Tex., assignor to Edward Friedrich, San Antonio, Tex. Filed May 6, 1931. Serial No. 535,524. 7 Claims. (Cl. 312-189.)

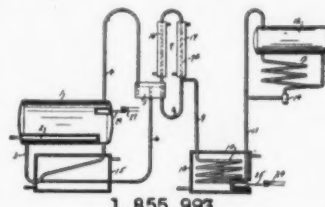
6. A cabinet having a doorway provided with a jamb, the plane of the face of which is inclined to the horizontal, a door in the cabinet to underlie said doorway as a closure, said door having a marginal gasket to lie against the doorway jamb, said cabinet having a door sill on which said door may rest in its closed position, a gasket on the lower edge of said door between it and the sill, continuous channeled guideways mounted on the cabinet at each side of the doorway and having portions extending under the top of the cabinet away from the doorway, upper and lower lugs on the door ends to lie in said guideways, said guideways including camming elements to act on said lugs as they approach the limit of their movement to the door closing position to force the face of the door toward the jamb and apply the entire marginal gasket to the face of the jamb simultaneously with the application of the lower edge gasket to the sill.

1,855,989. REFRIGERATOR CHAMBER, PARTICULARLY RAILWAY REFRIGERATOR VAN. Eric George Rowledge, London, England, assignor to J. Stone & Co., Ltd., Deptford, England, a Company of Great Britain. Filed Nov. 3, 1930. Serial No. 493,149, and in Great Britain Nov. 20, 1929. 4 Claims. (Cl. 62-117.)

1. Refrigerator chamber, comprising an insulating shell, false inner walls bounding a lading space and spaced away from said shell to form a circulation space enclosing said lading space, a separate compartment for cooling apparatus, an air supply duct arranged in the roof of the chamber and communicating between the cooling compartment and the lading space, an air return duct also arranged in said roof and communicating between the circulation space, which communicates with the lading space,

and the cooling compartment, and air forcing means for circulating air around a circuit constituted by said compartment, supply duct, lading space, circulation space and return duct.

1,855,993. CONTROL FOR REFRIGERATING SYSTEMS. Albert C. Schickler, Cleveland, Ohio, assignor to Edmund E. Allyne, Cleveland Heights, Ohio. Filed Feb. 1, 1930. Serial No. 425,191. 6 Claims. (Cl. 62-5.)



1,855,993

1. Intermittent absorption type refrigerating apparatus, comprising a boiler and an evaporator, a heater for the boiler, means sensitive to a variable boiler condition for terminating the heating operation, and means controlled in accordance with a condition depending upon condensation for controlling the rate of application of the heat to the boiler.

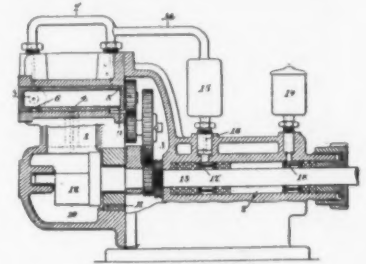
1,856,008. SHOWCASE REFRIGERATOR. Virgil P. Warren, Atlanta, Ga. Filed March 6, 1931. Serial No. 520,642. 5 Claims. (Cl. 183-4.)

1. Condensation preventing and removing system for the spaced-ply windows of showcase refrigerators, comprising a drier, a closed circulation system including said drier and the air cells between the plies of said window, means for inducing a flow of the air through said circulation system, and means for selectively intercalating any of said cells in said circulation system.

1,856,019. COMPRESSOR. Raoul Bernat,

Bordeaux, France. Filed May 2, 1927. Serial No. 188,368, and in France May 5, 1926. 2 Claims. (Cl. 230-206.)

1. A compressor for refrigerating installations comprising a rotary valve, two series of pockets in said valve, a pipe for leading the oil to one of said series of pockets, a second pipe connecting one of said series of pockets with the other series, a stuffing



1,856,019

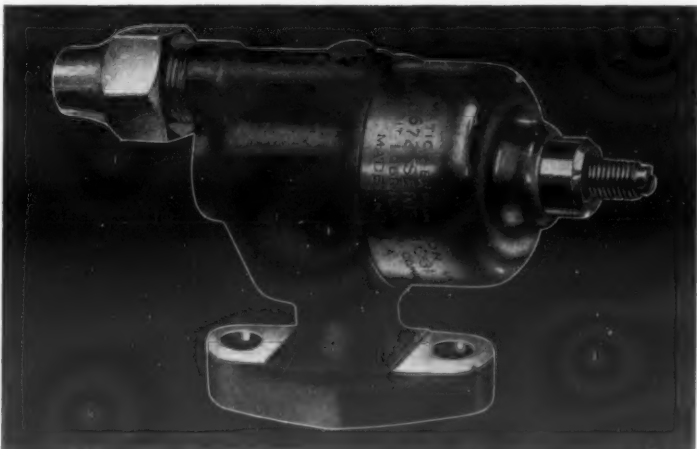
box, a third pipe connecting said second pipe with said stuffing box, a set of gears and means for leading oil from one of said series of pockets to said gears to lubricate the same.

1,856,041. REFRIGERATOR UNIT FOR RAILROAD CARS. John M. LeMeux, New Orleans, La. Filed Aug. 28, 1929. Serial No. 389,013. 6 Claims. (Cl. 62-117.)

1. In a refrigerating system for railroad cars, a refrigerating compartment, pipes leading into and out of said compartment, a series of coils at each end of said compartment, the pipes leading into and out of said compartment connected to said coils, a coil adjacent the top of the compartment and connected to the two end coils, and condensing and compressing means beneath said compartment and connected to the said pipes leading into and out of said compartment.

(Continued on Page 19, Column 1)

MOISTURE-PROOF SENSITIVE, EASILY ADJUSTED



The No. 672 "Genuine Detroit" (formerly known as American) Automatic Expansion Valve is standard equipment on 90% of machines using the direct expansion system.

Only one moving part. Is used on domestic and commercial installations with any refrigerant not detrimental to brass.

Insist upon machines using "Genuine Detroit" valves for efficiency, durability and freedom from service.

American Castincoil units are furnished in two, three or five tray sizes. Made of aluminum cast around copper coil, they



are the ultimate in economical and dependable service. Minimum amount of refrigerant required.

DETROIT LUBRICATOR COMPANY

Trumbull, Lincoln, Marquette & Viaduct
DETROIT, Mich., U. S. A.

Lubricators • Carburetors • Valves
Automatic Controls for temperature, pressure, humidity
Refrigeration, Oil Burner and Heating Accessories.

Division of AMERICAN RADIATOR & STANDARD SANITARY CORPORATION



is yours!

Product Good to the Core?

The core is really the foundation of quality in cabinet construction. That's why many leading manufacturers have standardized on SUPERIOR GALVANNEALED and SUPERIOR SUPER METAL. These sheets solve at once two important problems in cabinet production.

SUPER METAL is made from a special analysis, copper content steel coated with prime spelter by a special process. Through this treatment the coating is thoroughly amalgamated with the base sheet.

SUPER GALVANNEALED is similar in all essentials to SUPER METAL. The base sheet is of special analysis open hearth steel. It is zinc coated by the same heat treatment process.

Both sheets are unexcelled for construction of Kitchen Equipment, Refrigerators, Ice Cream Cabinets and diversified products requiring a fine finish, uniformity, a high degree of rust-resistance, workability, long life and other qualities that are desirable in fine cabinet construction.

Samples and Booklet on Request

The Superior Sheet Steel Co.

Canton, Ohio

Division of Continental Steel Corporation

Manufacturers of: Black, Galvanized, Long-Term and Special Coated Sheets, Roofing and Kindred Products; Billets, Rods, Wire, Nails and all types of Fence.

The patented heat treating process fuses the coating to the base metal, affording unusual resistance to rust.

The sheets are soft and ductile and the coating will not chip, flake or peel under the most difficult forming operations.

Offers an ideal surface (a bond) to which paint, lacquer and enamel finishes can be applied, without special treatment, and it will retain these finishes under severe conditions of use.

Through the widespread adoption of this special coated sheet metal cabinet manufacturers are offering the highest efficiency obtainable.

Superior
Super-Metal
PATENTED PROCESS

Superior
Galvannealed
PATENTED PROCESS

Lincoln, Bohn, Grinnell, Crosley, Devon, Mitycold

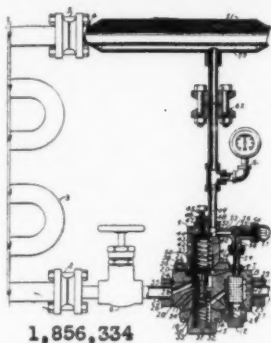
Lincoln SOUTHERN CAL. ENG. CO. Los Angeles							Bohn BOHN REFRIGERATOR CO. St. Paul, Minn.					Grinnell GRINNELL WASH- ING MACHINE CO. Grinnell, Iowa				Crosley CROSLEY RADIO CORP. Cincinnati		Devon DEVON MFG. CO. Brighton, Mass		Mitycold MITYCOLD CORP. Cleveland	
Model or Catalog No.	L-4	L-5	L-6	P-4	P-5	P-6	BE4-7	BE8-10	BE10-13	BE16-22	L	P	G	S	C-45	C-55	14	11	19		
CABINET SPECIFICATIONS																					
Overall dimensions, including hardware																					
Height (inches)							52 1/2	58 1/2	59 1/2	62 1/2	70 1/2	56	57 1/2	61 1/2	61	58 1/2	58 1/2	71	63	62	
Width (inches)							25 1/4	25 1/4	34 1/2	37 1/4	40 1/4	23 1/2	25 1/2	28 3/4	32 1/4	25 1/2	31 3/4	35 1/2	35	27	
Depth (inches)							20 3/4	20 3/4	21 1/4	23 3/4	26 1/2	22 1/2	23 1/2	27	27 1/2	20 3/4	21 1/4	28	28	24	
Thickness of insulation												2 1/4	3	3	3	2	2	3	3	3 3/4	
Top of cabinet (inches)												2 1/2	3	3	3	3 1/4	3 1/4	4	4	4 1/4	
Sides of cabinet (inches)												2 1/2	3	3	3	3 1/4	3 1/4	4	4	4 1/4	
Bottom of cabinet (inches)												2 1/2	3	3	3	3 1/4	3 1/4	4	4	4 1/4	
Inside dimensions of cabinet liner												26 3/4	29	30	29	29 1/4	29 1/4	28 1/2	22	34	
Height (inches)												19 1/4	19 1/4	22 1/2	25 1/2	19 1/4	19 1/4	19	19	21	
Width (inches)												15	16 1/2	18	19 1/2	14 1/2	14 1/2	19	19	18	
Depth (inches)												22	22	22	22	1.037 and .031	1.037	22	22	20	
Thickness of exterior metal (gauge)												20	20	20	20	1.037	.037	22	22	20	
Thickness of interior metal (gauge)												1	1	1	1	1	1	3	3	1	
Number of refrigerator doors	1	1	1	1	1	1															
STORAGE CAPACITY																					
Gross food storage capacity (cu. ft.)							4	6	8	10	16	4.47	5.3	7.0	8.3	4.83	5.82	10.6	9	7.5	
Net food storage (cu. ft.) (Nema rating)												4.0	4.6	6.46	7.23	4.5	5.5	9	7	7.0	
Number of shelves							4	5	6	4	5	6	7	8	4	4	4	8	6	4	
Total shelf area (sq. ft.) (Nema rating)							7	10	13	18	22	7.88	9.5	10.9	13.4	9.35	10.5	15.33	11.5	14	
Greatest distance between any two shelves												7	7	7 1/2	6 1/2	6 1/2	6 1/2	10.5	10.5	12	
Shortest distance between any two shelves												6	3	5	6	5 1/2	5 1/2	5	5	8	
ICE CUBE TRAYS																					
Number of ice cube trays	2	2	3	2	2	3	3	3	4	5	5	2	3	3	4	3	5	6	6	3	
Inside dimensions of trays (inches)																					
Length (at top of tray)	9 1/4	9 1/4	9 1/4	9 1/4	9 1/4	9 1/4						10 1/4	10 1/4	10 1/4	10 1/4	10 1/4	10 1/4	13	13	9	
Width (at top of tray)	5	5	5	5	5	5						3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	5 1/4	5 1/4	6	
Depth	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2						1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	2	
Number of cubes produced at one freezing												42	63	84	105	63	105	240	240	72	
Weight of ice cubes produced (lbs.)												3	4 1/4	5	6 1/2	4 1/2	7 1/2	20	20	3	
COMPRESSOR SPECIFICATIONS																					
Compressor capacity (lbs.) (ASRE rating)	90	90	90	90	90	90	125	125	125	175	175	119	119	119	119	65*	85*	135	135	126	
Motor size (hp.)	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-4	1-4	1-6	1-6	1-6	1-6	1-6	1-6	1-4	1-4	1-4	
Quantity of refrigerant in system (lbs.)	2	2	2	2	2	2	1 pt.	1 pt.	1 pt.	1 pt.	1 pt.	1/2 pt.	1/2 pt.	1/2 pt.	1/2 pt.	1/2 pt.	1/2 pt.	3 pts.	3 pts.	3	
Quantity of lubricant in system	1 lb.	1 lb.	1 lb.	1 lb.	1 lb.	1 lb.														20 oz.	
WEIGHT																					
Net weight of complete refrigerator (lbs.)							335	377	473	655		270	270	315	319	245	287	350	375	240	
Total shipping weight (lbs.)	275	300	360	290	325	375						310	328	360	388	312	350				
PRICE																					
F. o. b. factory price	\$85.50	99.00	117.00	94.50	108.00	130.50						\$99.50				\$99.50	139.50			\$199.50	
Retail price, without installation																				\$199.50	
Installed price																				\$199.50	
CABINET MATERIALS																					
Make of cabinet	Seeger						Bohn					Grinnell				Rex		Jewett		Facto Auto Body Co.	
Material used for exterior	Metal											Metal				Metal		Metal		Masonite	
Make of exterior metal	Wood											Auto body				Furniture steel		Auto body steel		Wood	
Material used for frame	Armco											Metal				Wood		Auto body steel		Armco	
Make of interior metal	Tinned											Armco				Armco		Auto body steel		Tinned	
Finish of shelves												Tinned				Tinned		Tinned		Tinned	
INSULATION																					
Make of insulation							Dry-Zero					Dry-Zero				Dry-Zero		Armstrong Cork		Masonite and foil	
Nature of insulating material							Vegetable					Vegetable				Vegetable		Vegetable		Vegetable and mineral	
Bulk or formed slabs							Formed slabs					Formed slabs				Formed slabs		Formed slabs		Formed sections	
FINISH																					
Cabinet finish (exterior)	L models—lacquer; P models—Porcelain						Porcelain					Lacquer				Lacquer		Lacquered body—porcelain door		Facto White	
Make of exterior finish	White						White					Grand Rapids and Dupont				White		French gray		White	
Colors offered as standard	Any color						Porcelain					White				None		Porcelain		Any color	
Colors offered on special order	Porcelain											Any color				Porcelain				Porcelain	
Cabinet finish (interior)																					
Make of interior finish																					
HARDWARE																					
Make of hardware	Seeger						Bohn					Grinnell				Winters & Crampton		Devon		National Lock	
Process of manufacture	Cast											Stamped				Stamped		Cast		Stamped	
Basic metal of hardware	Brass											Brass				Brass		Gun metal		Brass	
Finish of hardware	Chromium						Chromium					Chromium				Chromium		Old fashioned hammer		Chromium	
DOORS																					
Material used for breaker strip	Rubber																				
Material used for gasket																					
Make or brand of gasket																					
EVAPORATOR																					
Make of evaporator	Lincoln						Sunbeam					Grinnell				Crosley		None		Mullins	
Evaporator construction	Tubular						Tubular					Tubular				Shell		None		Shell	
Metal used for evaporator	Copper											Copper				Steel		None		Porcelain on steel	
Type of refrigerant control	Expansion valve						Expansion valve					Expansion valve				Capillary tube		None		Low side float	
Make of expansion valve	American Radiator						American Radiator					American Radiator				None		None		None	
Make of brine tank	None						None					None				None		None		None	
Solution used for brine	Aluminum						None					None				None		Ethylene Glycol		None	
Type and make of trays	1 1/4 x 1 1/2											Grinnell				Aluminum		Aluminum		1 1/4 x 1 1/2	
Dimensions of ice cube (inches)												1 1/4 x 1 1/2				1 1/4 x 1 1/2		1 1/4 x 1 1/2		1 1/4 x 1 1/2	
SPECIAL FEATURES																					
COMPRESSOR																					
Make of compressor	Lincoln						Sunbeam					Grinnell				Crosley		Devon		Mitycold	
Type of system	Conventional						Conventional					Conventional				Conventional		Conventional		Hermetic	
Type of compressor	Reciprocating						Reciprocating					Reciprocating				Reciprocating		Reciprocating		Reciprocating	
Compressor drive	Belt						Belt					Belt or direct				Belt		Direct		Direct	
Type and make of shaft seal	Rotary Seal Co.						Rotary Seal Co.					Bel lows				Seal ring		Bel lows		None	
Location of compressor	Below						Below					Above				Above		Below		Below	
CONDENSER																					
Make of condenser	Bush						Fan					Bush or Modine				McCord		None		Mitycold	
Fan or natural draft cooling	Fan						Fanned					Fanned tube				Fan		Fan		Natural and fan	
Type of condenser	Finned tube															Finned tube				Finned tube	
REFRIGERANT																					
Refrigerant used	Sulphur Dioxide						Sulphur Dioxide					Sulphur Dioxide				Sulphur Dioxide		Air		Methyl Chloride	
Trade name																					

Latest Patents in Electric Refrigeration

(Continued from Page 17, Column 5)

ISSUED MAY 3, 1932

1,856,334. TEMPERATURE RESPONSIVE REGULATING VALVE. John F. Hoffman, Omaha, Nebr., assignor to Baker Ice Machine Co., Inc., Omaha, Nebr., a Corporation of Nebraska. Filed April 21, 1928. Serial No. 271,754. 1 Claim. (Cl. 62-5.)



1,856,334

In a device of the character described including a valve housing having aligned pressure and fluid supply chambers, a diaphragm dividing said chambers, and a valve controlling flow through the supply chamber, means including a perforate cup slidable in the pressure chamber and engaging said diaphragm for operating said valve.

1,856,467. LIQUID COOLER. Ralph Copp, St. Louis, Mo., assignor to Pevely Dairy Co., St. Louis, Mo., a Corporation of Missouri. Filed Sept. 9, 1929. Serial No. 391,233. 8 Claims. (Cl. 62-141.)

1. A cooler of the character described comprising a longitudinal series of vertical pipes, horizontal pipes opening into the upper and lower ends of the vertical pipes respectively, a pipe system for maintaining a liquid refrigerant filling said horizontal pipe that opens into the lower ends of said vertical pipes and filling said vertical pipes to a constant level below said horizontal pipe that opens into the upper ends of said vertical pipes, means for discharging the liquid to be cooled upon the upper side of said upper horizontal pipe, a device for regulating the supply of liquid to said discharging means, and means for preventing the liquid from dripping from said upper horizontal pipe and for causing the liquid to flow down said vertical pipes.

1,856,472. MEAT RACK FOR REFRIGERATOR CARS. Arnold E. Dentler, Chicago, Ill., assignor to W. H. Miner, Inc., Chicago, Ill., a Corporation of Delaware. Filed June 1, 1931. Serial No. 541,398. 12 Claims. (Cl. 105-367.)

1. In a meat rack for refrigerator cars,

PROFESSIONAL SERVICE

Testing Laboratory

For refrigerators and refrigerating equipment
George B. Bright Co.
Refrigerating Engineers and Architects
2615 12th St., Detroit, Mich.

PATENTS

Searches, Reports, Opinions by a Specialist in REFRIGERATION
H. R. VAN DEVENTER
Solicitor of Patents - Refrigeration Engineer
342 MADISON AVE. NEW YORK

WHAT EVERY ELECTRICIAN WANTS TO KNOW!

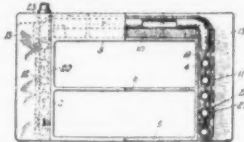
is easily found in **AUDLEY'S NEW ELECTRIC LIBRARY**. Electricity made simple as ABC. Up-to-date, trade dope for the expert and all electrical workers.
Questions, answers, diagrams, calculations, underwriter's code, design, construction, operation and maintenance of modern electrical machines and appliances FULLY COVERED.
All available at small cost, easy terms. **BOOK-A-MONTH** service puts this NEW information in your hands for \$6 a day. Write TODAY for Electric Folder and FREE TRIAL offer.
Thee, Audley & Co. 68 W. 23rd St. New York.

the combination with connected bars forming a gridlike rack structure for suspending meat supporting hooks; of shock absorbing means for suspending said connected bars.

1,856,500. AIR CONDITIONING APPARATUS. Arthur B. Modine, Racine, Wis., assignor to Modine Mfg. Co., Racine, Wis., a Corporation of Wisconsin. Filed May 28, 1926. Serial No. 112,374. 9 Claims. (Cl. 261-30.)

1. In a device as described, a radiator provided with passages for heating fluid, means including a valve connected to one of said passages for delivering a part of said fluid to the atmosphere, a fan including fan blades and a motor for advancing a column of air through said radiator, a shaft for said motor, said fan blades connected to said motor shaft, means for operating said valve, said valve operating means engaging said motor shaft, said motor shaft being capable of longitudinal movement, means urging said shaft in the direction of the advancing column of air to close said valve, said shaft being moved in the opposite direction and opening said valve when the fan is in motion.

1,856,536. REFRIGERATING SYSTEM. George W. Bungay, Plainfield, N. J., assignor to Aluminum Co. of America, Pittsburgh, Pa., a Corporation of Pennsylvania. Filed Dec. 10, 1929. Serial No. 412,953. 5 Claims. (Cl. 62-95.)



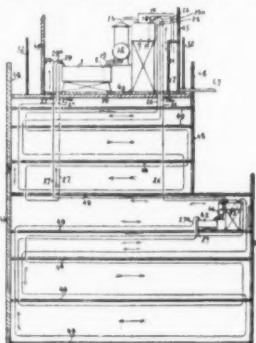
1,856,536

3. A refrigerator expander unit of the class described comprising a casing having a hollow wall with one side thereof corrugated, a filling of metal in said wall, and an expansion coil embedded in said metal filling.

1,856,544. OZONIZER. Albert E. Evans, Cleveland, Ohio, assignor, by mesne assignments, to The Corozone Co., Wilmington, Del., a Corporation of Delaware. Filed Jan. 30, 1928. Serial No. 250,604. 13 Claims. (Cl. 204-32.)

3. An ozone machine comprising: a casing, acting as an electrode; a transformer located in said casing; an electrode disposed within said casing; insulating material interposed between said electrode and said casing; and connections connecting said casing and said electrode to the secondary terminals of said transformer.

1,856,765. REFRIGERATING APPARATUS. Harry B. Hull, Dayton, Ohio, assignor to Frigidaire Corp., Dayton, Ohio, a Corporation of Delaware. Filed Dec. 31, 1928. Serial No. 329,496. 7 Claims. (Cl. 62-119.5.)



1,856,765

1. In refrigerating apparatus of the partial pressure type a closed circuit including an absorber and an evaporator, means in the circuit for circulating inert gas, means outside the circuit for circulating air to cool the absorber, and a common driving means for operating both the circulating means.

1,856,797. APPARATUS FOR HEATING, COOLING, AND REGULATING THE TEMPERATURE OF BUILDINGS. Felix F. von Wilmsowsky, New York, N. Y. Filed June 28, 1924. Serial No. 723,060. 6 Claims. (Cl. 257-8.)

2. In a plant for heating or cooling or regulating the temperature of the interior

of houses and other enclosed spaces and containers, the combination of two containers for a liquid, which are located above the level of such interior; and of temperature-imparting apparatus likewise located above the level of the said interior and by means of which a temperature suitable for the exchange of heat with the said interior can be imparted to such liquid; and of a line of piping which runs below the containers and through which the containers communicate and the liquid, while at a temperature as aforesaid, can flow from one container down to the said interior, exchange heat with the interior and then rise up into the other container; and of a pressure-producing device by means of which the liquid can be made to pass, while above the level of the interior, from the second container back into the first-said container.

1,856,881. HEAT INSULATING STRUCTURE. Victor J. Moss, Brooklyn, N. Y. Filed Dec. 28, 1929. Serial No. 417,066. 6 Claims. (Cl. 220-24.)

1. A heat-insulating structure embodying, in combination, a heat-insulating element composed of a light, porous material of low structural strength, a frame composed of a material having relatively high structural strength surrounding the edge of said insulating element, and walls of an odorless, non-porous, moisture and air-tight sealing paper arranged on the opposite sides of said insulating element and having an adhesively sealed connection with the frame to provide an air and water tight sealed compartment with said insulating material contained therein.

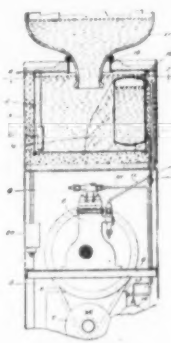
1,856,919. ICELESS COOLER. Bernard Landen, Oakland, Nebr. Filed June 5, 1930. Serial No. 459,389. 1 Claim. (Cl. 187-3.)

In an iceless cooler, a casing adapted to be positioned beneath the surface of the earth, a carrier adapted for movement into and out of said casing, said carrier being adapted to move into said casing through gravity after each removal therefrom, a spool, a cable connecting said carrier to said spool and adapted to be wound upon the latter to raise said carrier, a motor for said spool, a worm gear loose upon the motor shaft, means connecting said worm gear and motor shaft for causing them to move together when said motor shaft moves in one direction, a worm in mesh with said worm gear, and a brake for said worm.

1,856,920. REFRIGERATED FOOD PACKAGE. Carl L. Lohner and John I. Covey, Chicago, Ill., assignors, by mesne assignments, to Industrial Patents Corp., Chicago, Ill., a Corporation of Delaware. Filed Sept. 17, 1930. Serial No. 482,418. 2 Claims. (Cl. 62-91.5.)

1. A refrigerator meat package comprising a wooden container, a water-proof lining covering the interior of the container, a packing of open material covering the inner side of the lining, a liner of corrugated material within the packing, a waxed paper liner within the corrugated liner to receive the meat and of a length to be gathered over the contents of the package, a solid refrigerant at the top and bottom of the container, and a cover closing the top of the container.

1,856,982. METHOD AND APPARATUS FOR COOLING DRINKING WATER. Frank R. West, Detroit, Mich., assignor to Rice Products, Inc., Detroit, Mich., a Corporation of Michigan. Filed Aug. 13, 1927. Serial No. 212,640. 12 Claims. (Cl. 62-141.)



1,856,982

1. The method of utilizing mechanical refrigeration in cooling drinking water, which comprises providing a relatively large supply of drinking water, cooling said water by directly positioning the volatile refrigerating medium therein and reducing the heat transfer effect between the water and the cooling unit by insulating the refrigerating medium with a layer of ice, whereby to materially reduce the strain on the compressor.

1,857,078. REFRIGERATING SYSTEM. Leon Buehler, Jr., and William Henry Aubrey, Waynesboro, Pa., assignors to Frick Co., Waynesboro, Pa., a Corporation of Pennsylvania. Filed Jan. 6, 1930. Serial No. 418,932. 4 Claims. (Cl. 62-160.)

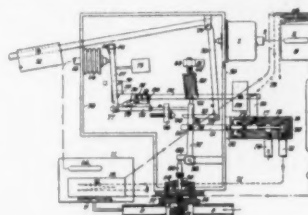
1. An evaporator for a refrigerating system comprising a pair of upper headers having transverse headers connecting them, a pair of lower headers having transverse headers connecting them, a plurality of bowed tubes connected in spaced relation to the upper and lower transverse headers, the said bowed tubes being bent in the form of W's and having their ends slightly bent to enter the transverse headers, substantially as set forth.

1,857,086. MEANS FOR PREVENTING CONDENSATION IN REFRIGERATOR WALLS. David F. Keith, Cleveland Heights, Ohio, assignor to Perfection Stove Co., Cleveland, Ohio, a Corporation of Ohio. Filed Nov. 20, 1928. Serial No. 320,630. 17 Claims. (Cl. 62-1.)

2. A refrigerator comprising a cabinet having spaced-apart inner and outer walls and enclosing a cold chamber, the space between said walls containing insulating material, the cabinet incorporating a passageway leading from its exterior to said space and passing in intimate heat exchanging rela-

tion to the cold chamber, the same being so arranged as to drain any moisture condensed therein away from said space.

1,857,105. REFRIGERATING APPARATUS. Joseph William Winter, Penfield, Pa., assignor to Master Domestic Refrigerating Co., Inc., Conshohocken, Pa., a Corporation of



1,857,105

New York. Filed Aug. 8, 1930. Serial No. 473,898. 4 Claims. (Cl. 62-5.)

1. In refrigerating apparatus of the absorption type, including a generator, a condenser, and an evaporator; the combination with a gas burner arranged to heat said generator, an auxiliary refrigerant conduit

to said generator and an auxiliary refrigerant conduit to said condenser; of automatically operative valve means controlling the supply of fuel gas to said burner and said auxiliary refrigerant to said generator and to said condenser; and thermostatic means arranged to operate said valve means in accordance with the temperature of a region being refrigerated by said apparatus; including a corrugated metal bellows, a lever adapted to be shifted by said bellows, and a pawl lever provided with a weight, adapted to restrain said bellows lever until there is sufficient pressure accumulated in said bellows to tilt said pawl lever and thereby release said bellows lever and permit snap action thereof.

1,857,122. ICE CUBE FORMING AND DISPENSING DEVICE. Alvin G. Sherman, Grosse Pointe, Mich. Filed Jan. 16, 1930. Serial No. 421,124. 10 Claims. (Cl. 62-108.5.)

1. Means for freezing and dispensing ice cubes, comprising a series of containers formed of a flexible material to which ice does not readily adhere and shaped to form the ice cubes, said containers being connected together to form a belt, sharp freezing means forming a freezing zone, means for moving said belt through said zone, and means for distorting the containers for removal of ice therefrom.

Corrosion Proof Needle Valves



HAYNES STELLITE

The Mayson Haynes Stellite Tipped Needle Valve

MAYSON MFG. CO.

4332 Horatio St.

Detroit, Mich.

Stellite is hard and stainless in SO₂; the ideal material for use in Float and Expansion valves. The Mayson process (Patent pending) makes this expensive alloy available to refrigeration manufacturers at reasonable prices.

Precision workmanship — Manufactured to your blue print—150,000 now in service—Let us quote on your requirements.

At the Vital Spot



HAYNES STELLITE

The Mayson Haynes Stellite Tipped Needle Valve

Haynes Stellite, the cobalt-chromium-tungsten alloy, is now available in the form of valve needles for electric refrigerators.

The unique properties of Haynes Stellite make it ideal for parts that may be subjected to corrosive conditions as in wet sulphur dioxide. Inherently hard as cast, requiring no heat treatment, it is highly resistant to wear, erosion, and corrosion. At points where most severe conditions exist you will find Haynes Stellite.

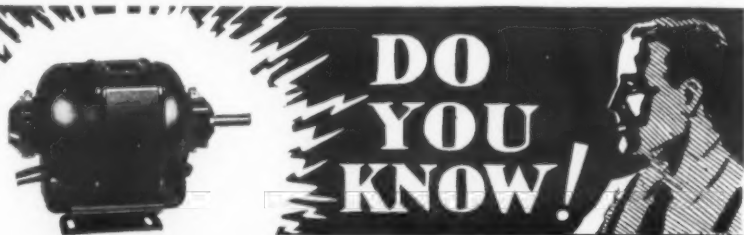
Recognizing the importance of the needle valve in electric refrigerators, several leading manufacturers have adopted the Mayson Haynes Stellite-tipped needle as standard.

HAYNES STELLITE COMPANY

Unit of Union Carbide and Carbon Corporation



General Office and Works — Kokomo, Indiana



DO YOU KNOW!

That the Leland cradle-mounted, brush-lifting motor shown here is generally admitted to be the most silent in operation of any motor on the American market—

That it is usually specified where quiet running is of major importance—

That Leland representation is fully qualified to render prompt, accurate service!

The Leland line is complete—no doubt contains the motor your specifications require. 1/8 to 3 h.p. Write—

The Leland Electric Co., Dayton, Ohio, U. S. A.

Cable address
"Lelect"

Canadian address
Toronto

Leland Motors